Journal of Multidisciplinary Research

Special Issue: Collaboration with Ben Gurion University of the Negev

Vol. 17, No. 2 **Fall 2025**

Journal of Multidisciplinary Research

ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Contact Information

Professor Hagai Gringarten, Ph.D., Editor-in-Chief, *Journal of Multidisciplinary Research*
c/o O'Mailia Hall, 16401 N.W. 37th Avenue, Miami Gardens, Florida 33054
Telephone +1 (305) 628-6635 E-mail: jmr@stu.edu

Journal Web Address http://www.jmrpublication.org

Journal Indexing & Listing

Indexed in ProQuest, Cabells, EBSCO, Gale-Cengage Learning, Business History Conference Collective Bibliography (BHC), CiteFactor, Mendeley, Ulrich's, de Gruyter (Germany), Elektronische Zeitschriftenbibliothek (EZB) (Germany), European Reference Index for the Humanities and the Social Sciences (ERIH PLUS) (Norway); and Directory of Open Access Resources (ROAD).

Listed in AcademicKeys, Cabells Journalytics, Cision Directory, EconPapers, Εθνικός Συλλογικός Κατάλογος Επιστημονικών Περιοδικών (Greece), Gaudeamus, Google Scholar, Isis Current Bibliography, JournalSearches, JournalSeek, Journals4Free, The Linguist List, MediaFinder, Microsoft Academic, NewJour, Research Papers in Economics (RePEc), Semantic Scholar, ACNP (Italy), BVB-Bibilotheks Verbund Bayern FAST-Zugang (Germany), CIRC (Spain), COPAC (England), CORE (UK), CUFTS Journal Database (Canada), EconBiz (Germany), Edanz (Japan), Globethics, (Switzerland), HEC Paris Journal Finder (France), JUFO (Finland), The Lens (Australia), Library Hub Discoverer (UK), MIAR (Spain), Mir@bel (France), National Library of New Zealand, Norwegian Register for Scientific Journals, Series, and Publishers (Norway), NSD - Norwegian Register (Norway), PhilPapers (Canada), REBIUN-CRUE (Spain), ROAD: Directory of Open Access Scholarly Resources (France), SUDOC (France), ZeitschriftenDatenBank (ZDB) (Germany), and the Open University of Hong Kong Electronic Library (Hong Kong). Accessible via BASE-Bielefeld Academic Search Engine (Germany).

Mission Statement

The mission of the *Journal of Multidisciplinary Research* is to promote excellence by providing a venue for academics, students, and practitioners to publish current and significant empirical and conceptual research in the arts; humanities; applied, natural, and social sciences; and other areas that tests, extends, or builds theory.

Journal of Multidisciplinary Research

Vol. 17, No. 2 Fall 2025

Contents

Special Issue: Collaboration with Ben Gurion University of the Negev

Articles

Life Forward

Book Reviews

Index to Volume 17

Journal of Multidisciplinary Research, Vol. 17, No. 2, Fall 2025, 3–4.
ISSN 1947-2900 (print) * ISSN 1947-2919 (online)

Special Issue – Guest Editorial

Resilience, Strategy, and Innovation Across Systems

The Fall 2025 issue of the *Journal of Multidisciplinary Research* (Vol. 17, No. 2) represents more than just a collection of scholarly articles; it is a testament to the enduring power of international academic collaboration, specifically, the meaningful partnership between Ben-Gurion University of the Negev and St. Thomas University. This alliance holds special resonance at this pivotal moment. Still navigating the long-term aftermath of the COVID-19 pandemic, and against the backdrop of compounding global health crises and the profound geopolitical shockwaves of the war with Iran, the resilience of our societal infrastructures is being tested daily. In times like these, crossing institutional and geographical boundaries to share knowledge is not just an academic exercise; it is a vital necessity.

As Associate Editor and Guest Editor, I am proud to introduce a volume that embraces the true spirit of multidisciplinary research, exploring how diverse systems, ranging from public health and legal frameworks to community arts and business strategy, adapt, innovate, and promote human well-being in a turbulent world.

While health systems naturally take center stage during times of crisis, this issue reflects the understanding that societal resilience is highly interconnected. Opening our articles section, Dr. Dadon examines the cultural disparities shaping the use of student health services in Israel. This research underscores the vital importance of cultural competence in public health, demonstrating how proper accessibility to preventative medicine can bridge significant societal gaps. Expanding on health behaviors, Wong provides a comprehensive literature review on the impact of the COVID-19 pandemic on smoking cessation efforts, shedding light on the psychological and economic struggles individuals faced in the shadow of a global health crisis.

Beyond traditional healthcare, technological disruption is forcing established institutional systems to evolve. Costabel explores the integration of Artificial Intelligence (AI) into the legal system, the very foundation that provides the regulatory and ethical guardrails for deploying new technologies across all sectors. In parallel, Kapuku and Rudnick demonstrate how the synergy of AI and Process-Improvement (PI) methodologies can safeguard the physical well-being of Limited English Proficiency (LEP) workers, thereby transforming occupational safety protocols for vulnerable populations.

Yet, true resilience is not built on policies and technologies alone; it is deeply rooted in human connection. Turner reminds us of this by examining how the arts contribute to community building, emphasizing that social cohesion and mental well-being are inseparable components of a thriving society.

In our “Life Forward” section, the focus returns to the acute management of life-saving systems. I had the distinct privilege of conducting an in-depth conversation with Eli Levi, Deputy Director General of the Government Hospitals Unit for the Israel Ministry of Health. This interview, exploring the management of health systems “in the line of fire,” offers a rare, behind-the-scenes look at strategic decision-making during acute crises, providing essential insights into operational readiness and health economics in environments of extreme uncertainty.

Finally, our Book Reviews section offers additional perspectives that enrich this multidisciplinary discourse. Iyer reviews *PIVOTAL Strategy: The Infinity Marketing Canvas and Framework* by Opresnik, Hollensen, and Kotler. The concepts of purpose-driven management discussed in this book provide highly valuable models for building rapid adaptability, principles that are exceptionally relevant for leaders across any modern organization striving to reinvent itself. Alongside this, Karnani reviews *Has Medicine Lost Its Mind?* by Smith. This book presents a profound critique of the modern mental health system and the historical divide between mind and body, complementing our discussions on holistic well-being. Rounding out the issue, Szendrő reviews literature on neuroarthistory, beautifully tying together the cognitive sciences and the humanities.

I must express my deepest gratitude to the Editor-in-Chief, Professor Hagai Gringarten. He has been much more than a guiding force; he has been a true partner in this endeavor. In fact, it is his tireless dedication and the lion’s share of the work he undertook that truly brought this special issue to fruition. His vision and commitment to multidisciplinary excellence are woven into every page of this volume.

I invite you to explore the pages of this issue, with the hope that the diverse scholarship presented here will inspire new ways of thinking about how we build, manage, and sustain the systems that shape our lives.

Ya’akov M. Bayer, Ph.D.
Associate Editor and Guest Editor
Journal of Multidisciplinary Research

Journal of Multidisciplinary Research, Vol. 17, No. 2, Fall 2025, 5–22.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Cultural Disparities in the Use of Student Health Services in Israel: Routine Vaccinations, Health Education, and Screening Tests

Tzion Dadon
Ben Gurion University of the Negev, Israel
Ministry of Health, Israel

Abstract

Background: School Health Services (SHS) play a central role in preventive care by providing routine immunizations, screenings, and health education to students. In Israel, the structure and effectiveness of SHS vary by region and cultural group, shaped not only by the administrative model (public vs. private) but also by deeper sociocultural dynamics. While previous research has addressed structural and socioeconomic disparities, the cultural dimensions of SHS utilization remain underexplored.

Objective: This study investigates how cultural identity influences access to and participation in SHS among students in Israel between 2011 and 2022. It examines disparities in vaccination uptake, health education, and screening across diverse cultural and educational contexts.

Methods: The researcher employed a mixed-methods approach, combining national SHS coverage data over 11 academic years with qualitative data from semi-structured interviews and field observations involving school nurses and health coordinators. The researcher stratified quantitative data by cultural affiliation, education stream, geographic region, and service model. Thematic analysis of the qualitative data identified key cultural barriers and enablers of SHS engagement.

Results: The researcher identified significant disparities across service delivery models and cultural groups. For HPV vaccination, the public model demonstrated a consistent advantage, particularly among Arab and Druze students, while coverage in the ultra-Orthodox sector remained notably low under both models. Influenza vaccination showed no consistent advantage for either model. In contrast, standardized screening services (growth and vision) and health education demonstrated a clear and consistent advantage for the private model across all sectors and educational streams. Qualitative findings indicate that culturally sensitive services, such as HPV vaccination, are primarily influenced by trust and community norms, whereas technical services are shaped mainly by organizational structure and task specialization.

Conclusion: Cultural identity constitutes a central axis of health inequality within School Health Services; however, the organizational structure—public versus private—also plays a significant role in shaping patterns of access and coverage. Promoting equity therefore requires integrating culturally responsive practices and strengthening the cultural competence of professionals, alongside a critical examination of the service delivery model and the adoption of policy frameworks that enable contextual flexibility, operational efficiency, and close community engagement.

Keywords

school health services, cultural disparities, Israel, vaccination, health education, Haredi, Arab minority, health inequality, privatization, cultural competence

Introduction

Equitable access to preventive healthcare during childhood is a cornerstone of public health policy (WHO, 2021; Marmot, 2020). In Israel, School Health Services (SHS) are mandated to deliver routine vaccinations, screening tests, and health education to more than 1.5 million students annually. These services operate under a hybrid model: The Ministry of Health (MOH) directly serves some regions, while private contractors such as Natalie and Pemi manage others (Dadon, 2025).

While previous studies have examined the structural, managerial, and economic aspects of SHS delivery (Levi et al., 2022), less attention has been given to cultural dimensions influencing service uptake. Israel is characterized by profound cultural diversity, including secular, religious-Zionist, and ultra-Orthodox (Haredi) Jewish populations, alongside Arab Muslim, Christian, Druze, and Bedouin minorities (Smooha, 2023). These groups differ significantly in their perceptions of health, trust in governmental institutions, attitudes toward vaccination, and gender-related health norms (Rosen et al., 2021).

Recent data underscore sharp disparities in SHS coverage. For instance, HPV vaccination rates remain below 15% in Haredi schools and under 55% in Bedouin schools, compared to over 60% in state-secular schools, even when controlling for socioeconomic status (Dadon, 2025). These disparities suggest that cultural, not merely economic or logistical, factors play a central role in shaping parental consent and student participation.

Qualitative findings from school nurses and regional health coordinators further illustrate the complexity of these cultural barriers. Reports highlight religious objections, parental mistrust, gender norms, and language gaps as significant influences on the delivery and acceptance of services (Jacobson et al., 2023). Moreover, the structure of service provision interacts with these barriers. Public-sector nurses often maintain stronger community ties and greater flexibility in adapting to cultural contexts. In contrast, privatized models follow standardized protocols with limited capacity for local adaptation (Dadon et al., 2024).

This study aims to examine the influence of cultural identity on the accessibility and utilization of SHS in Israel from 2011 to 2022. Employing a mixed-methods approach, the research analyzes disparities in service coverage across cultural and educational contexts and investigates the mechanisms through which cultural identity mediates engagement. By integrating national coverage data with qualitative field insights, the study provides a nuanced perspective on how cultural alignment, or lack thereof, shapes health equity in school-based preventive care.

Accordingly, the central research question guiding this study is as follows: How does cultural identity (e.g., Haredi, Arab, or secular affiliation) influence students' utilization of School Health Services (SHS) in Israel, and in what ways do different service delivery models (public vs. private) promote or hinder equitable access to these services?

Literature Review

The role of culture in shaping health behavior has been the subject of extensive documentation across disciplines including medical anthropology, sociology, and public health. Cultural beliefs and values significantly influence how individuals interpret health risks, interact with healthcare providers, and make decisions about preventive care. In the context of child health, parental attitudes toward bodily autonomy, gender roles, and institutional authority, rooted in religious or ethnic identity, can determine whether families engage with or reject school-based health services (Dubé et al., 2021).

A central concept in addressing these disparities is *cultural competence*, which refers to the ability of healthcare systems and professionals to understand, respect, and respond appropriately to the cultural contexts of their patients. Studies have shown that lack of cultural competence can lead to underutilization of available services, even in cases in which physical and financial access is a guarantee. For instance, when people perceive health education materials as culturally inappropriate, or when delivery of vaccination programs comes without consideration of local moral norms, families may disengage from the entire system (Jongen et al., 2018).

International research has highlighted how cultural mismatch can hinder the effectiveness of SHS, especially among ethnic and religious minorities. In multicultural societies such as the United States, Canada, and the United Kingdom, disparities in SHS utilization have links to religious concerns, language barriers, and mistrust in public institutions. These findings suggest that even in structured educational settings, cultural dissonance between service design and community expectations can undermine preventive health goals (Williams et al., 2019).

In Israel, the country's unique cultural composition and political context further intensify these global dynamics. The population includes highly distinct sectors, such as secular Jews, religious Zionists, ultra-Orthodox (Haredi) Jews, Arab Muslims, Christians, Druze, and Bedouins, each with its own worldview, norms of modesty, and trust (or lack thereof) in state institutions. This heterogeneity poses substantial challenges for SHS implementation. For example, HPV vaccination, routinely on offer in Grade 8, has faced widespread resistance in Haredi and Arab schools, due to concerns about sexuality, fertility, and religious permissibility. Health education programs have similarly been curtailed or blocked in schools in which principals or parents view the content as violating religious or cultural codes (Dadon et al., 2024; Dadon, 2025).

Moreover, the delivery model of SHS interacts with these cultural dynamics. In Israel's partially privatized system, private providers often implement rigid guidelines and allow little room for local adaptation. Nurses who private contractors employ frequently report minimal contact with families and limited ability to tailor educational materials to specific populations. In contrast, nurses working in the public sector tend to embed themselves more deeply in local communities and actively collaborate with religious leaders or local clinics to build trust and legitimacy. This contrast underscores the importance of aligning service models with the cultural landscapes they serve (Levi et al., 2022; Dadon et al, 2024).

Despite growing recognition of the importance of cultural responsiveness in healthcare, researchers have rarely examined how these dynamics unfold in school-based health services in Israel. Most existing studies concentrate on structural or socioeconomic disparities. In contrast, few scholars have explored the cultural dimension, especially in relation to privatization. This study addresses that gap by analyzing cultural disparities in SHS coverage and examining how cultural beliefs, institutional trust, and service delivery models interact to produce unequal health outcomes.

Methodology

Study Design

This study employed a convergent mixed-methods design to examine how cultural identity influenced the utilization of SHS in Israel between 2011 and 2022. The integration of quantitative and qualitative approaches enabled a comprehensive assessment of both the magnitude of disparities in service coverage and the cultural and organizational mechanisms underlying them. Findings from both components were integrated at the interpretation stage, based on the premise that statistical patterns alone are insufficient to explain the sociocultural dynamics shaping service utilization.

Quantitative Component

The quantitative component was based on national administrative SHS coverage data spanning 11 academic years (2011–2022). The dataset included annual coverage rates for routine vaccinations (including HPV and influenza), standardized screening services such as growth measurements and vision assessments, and structured school-based health education activities. To assess disparities in service utilization, the researcher disaggregated data across three principal dimensions: cultural group (Jewish-secular, religious, and Haredi; Arab-Muslim, Christian, Druze, and Bedouin), educational stream (State, State-Religious, and Haredi Independent), and service delivery model (public versus private provider). The researcher calculated annual coverage rates for each subgroup, allowing longitudinal comparisons over the study period. The researcher used descriptive statistics to identify trends and sectoral differences. The researcher conducted independent-samples t-tests to determine statistically significant differences between groups. They defined statistical significance as $\alpha = 0.05$. The researcher reported differences as absolute differences (Δ) with corresponding 95% confidence intervals (CI), enabling both statistical and substantive interpretation of disparities.

Qualitative Component and Analysis

The qualitative component included 32 semi-structured in-depth interviews with school nurses, regional SHS coordinators, and program administrators. The researcher selected participants באמצעות purposive sampling to ensure representation across diverse cultural sectors and both service delivery models (public and private). In addition, the researcher conducted three focused observations of SHS nurses' arrival at selected schools. These observations concentrated on organizational and cultural aspects associated with the nurses' entry into the school environment, including initial interactions with school principals and staff, reception dynamics, and preparatory arrangements for service provision. The purpose was to identify early indicators of institutional trust, perceived legitimacy, and cooperation within different cultural contexts. The observations did not involve full-day shadowing or direct observation of clinical procedures.

The researcher analyzed qualitative data-including interview transcripts and field notes using thematic analysis, applying a combined deductive and inductive coding approach. The researcher derived initial coding categories from the study's conceptual framework (e.g., institutional trust, gender norms, perceived legitimacy, religious authority, and cultural norms), while additional themes emerged iteratively from the data. The analytical process involved open coding, category development, and cross-sector comparison to identify recurring patterns and mediating mechanisms. The researcher gave particular attention to the interaction between cultural identity and service delivery model in shaping service acceptance or resistance (Saldaña, 2021).

Ethical Considerations

The study received approval from the Ethics Committee of the Faculty of Health Sciences at Ben-Gurion University of the Negev, as well as formal authorization from the Israeli Ministry of Health. All qualitative participants provided written informed consent. The researcher conducted interviews exclusively with professional staff, rather than students or parents, in order to protect privacy and minimize ethical risk. The researcher conducted fieldwork with a high degree of cultural sensitivity, particularly in religious and minority communities where trust, discretion, and respect for local norms were essential.

Results

The results are presented through an integrative analytical framework that combines quantitative coverage data with qualitative field insights. This approach moves beyond descriptive comparison to examine how cultural identity and service delivery structures interact in shaping patterns of access and utilization. Quantitative findings identify the scope and persistence of disparities across cultural and institutional categories, while qualitative evidence illuminates the underlying mechanisms—such as institutional trust, normative frameworks, and organizational flexibility-that mediate these inequalities. Presenting the findings in a woven format allows for a more nuanced interpretation of how structural arrangements and cultural contexts co-produce differential health outcomes within school-based preventive care.

It is important to note that certain routine health services show consistently high coverage rates across all sectors, with no significant differences between public and private providers. These services include childhood vaccinations such as MMRV (measles, mumps, rubella, varicella), Tdap-IPV (tetanus, diphtheria, pertussis, and polio), and the Tdap booster in grade 8, as well as first-grade screening tests (vision, hearing, and growth). Given their uniformly high coverage rates (exceeding 90%), these services were thus excluded from further analysis.

HPV Vaccination Coverage

The analysis of HPV vaccination coverage revealed statistically significant disparities across cultural sectors and service delivery models (Tables 1 and 2). Consistently, the public model achieved higher vaccination rates than the private model across most population groups.

The largest gaps were observed in the Arab and Druze sectors. In the Arab sector, coverage reached 95.77% under the public model compared to 49.56% under the private model ($p < 0.001$). Among Druze students, rates were 93.96% versus 62.15%, respectively ($p < 0.001$). Among Jewish students overall, coverage remained lower in both models; however, the public model maintained a statistically significant advantage (37.05% vs. 29.39%, $p < 0.001$). The Bedouin sector showed a slight advantage for the private model, though this finding should be interpreted cautiously due to the relatively small sample size.

A similar pattern emerged when analyzed by educational stream. In the secular state system, coverage was significantly higher under the public model (67.86% vs. 53.32%, $p < 0.001$), while in the religious state system the difference was smaller but remained significant (44.26% vs. 39.71%, $p < 0.001$). In the ultra-Orthodox (Haredi) system, vaccination rates were notably low in both models (12.42% in the public model and 7.42% in the private model), although the public model retained a significant advantage.

Overall, the public delivery model demonstrates a consistent advantage in HPV vaccination coverage, particularly in traditional and minority communities. However, in populations characterized by strong cultural or religious resistance-such as the ultra-Orthodox sector—coverage remains low regardless of organizational structure.

Table 1

HPV Vaccination Coverage by Cultural Sector and Service Model

Sector	Public Model (%)	Private Model (%)	Δ (95% CI)	T(df)	p-value
Arabic	95.77 (N=536)	49.56 (N=2,248)	46.21 (42.44–49.95)	24.09 (2,782)	<0.001
Bedouin	54.24 (N=675)	63.13 (N=73)	-8.89 (-19.54–-0.24)	-2.01 (746)	<0.05
Circassian	73.30 (N-10)	32.97 (N=10)	40.33 (15.65–69.00)	3.34 (18)	<0.05
Druze	93.96 (N=128)	62.15 (N=128)	31.81 (24.20–38.41)	8.24 (234)	<0.001
Jewish	37.05 (N=3,235)	29.39 (N=13,269)	7.66 (6.34-8.97)	11.43 (16,491)	<0.001

Table 2

HPV Vaccination Coverage by Education Stream and Service Model

Type of education system	Public Model (%)	Private Model (%)	Δ (95% CI)	T(df)	p-value
secular state	67.86 (N=2451)	53.32 (N=6918)	14.54 (12.93-16.14)	17.55 (9367)	<0.001
religious state	44.26 (N=818)	39.71 (N=2481)	4.55 (2.05-7.05)	3.57 (3297)	<0.001
Haredi/ultra-Orthodox	12.42 (N=1292)	7.42 (N=6331)	5 (3.76-6.24)	7.88 (7621)	<0.001

Qualitative evidence reinforced and contextualized these quantitative disparities. School nurses from both public and private sectors described culturally specific barriers influencing HPV vaccine uptake.

In ultra-Orthodox schools, nurses frequently encountered religious and moral resistance, including concerns regarding infertility and the perceived promotion of early sexuality:

> "They told me the vaccine promotes promiscuity or causes infertility. Even when I gave them written explanations, most parents just didn't return the forms." (Nurse, Jerusalem)

Similarly, in Arab communities, parents expressed apprehension about the timing and long-term effects of the vaccine:

> "The mothers asked: Why now? Why at this age? Will it harm her ability to have children?" (Nurse, Central District)

In contrast, nurses working in secular state schools described higher levels of institutional trust and openness to medical explanations:

> "Parents ask questions, but they also listen. When we explain things clearly, they tend to agree." (Nurse, Northern District)

These narratives illuminate the mechanisms underlying the statistical patterns observed. In communities characterized by high levels of institutional trust and normative alignment with biomedical frameworks, vaccine acceptance was more readily achieved. Conversely, where cultural norms, religious authority structures, or fertility-related concerns were prominent, resistance persisted despite service availability. The qualitative findings therefore underscore that disparities in HPV coverage reflect not only differences in service delivery models but also deeply embedded cultural perceptions and community-level dynamics.

Influenza Vaccination Coverage

The analysis of seasonal influenza vaccination coverage revealed statistically significant differences across cultural sectors and service delivery models (Tables 3 and 4). However, unlike the clear pattern observed for HPV vaccination, influenza coverage did not consistently favor one model across most population groups.

The most pronounced public-model advantage was observed in the Druze sector, where coverage reached 52.82% under the public model compared to 33.06% under the private model ($p < 0.001$). In contrast, among Jewish students, the private model demonstrated a modest but statistically significant advantage (30.07% vs. 27.44%, $p < 0.001$). Among Arab students, coverage rates were similar between models (50.23% public vs. 51.62% private), indicating minimal structural difference. In the Bedouin and Circassian sectors, differences between models were small and should be interpreted cautiously, particularly given limited subgroup sizes.

A similar pattern of variability emerged when analyzed by educational stream. In the secular state system, coverage rates were nearly identical between models (38.83% vs. 38.62%), suggesting little influence of service structure. In the religious state system, the private model showed higher coverage (29.01% vs. 25.38%, $p < 0.001$). Likewise, in the ultra-Orthodox (Haredi) system, coverage was higher under the private model (25.96% vs. 22.89%, p < 0.01), although overall rates remained relatively low in both models.

Overall, influenza vaccination coverage does not demonstrate a consistent advantage for either service delivery model. Differences are generally modest and sector-specific. Unlike HPV vaccination, where the public model showed a clear and systematic benefit, influenza uptake appears less structurally determined and more influenced by broader perceptions of disease severity and the perceived necessity of seasonal immunization.

Table 3

Influenza Vaccination Coverage by Cultural Sector and Service Model

Sector	Public Model (%)	Private Model (%)	Δ (95% CI)	T(df)	p-value
Arabic	50.23 (N=2548)	51.62 (N=4828)	-1.39 (-0.03–-2.75)	-2.01 (7374)	<0.001
Bedouin	38.35 (N=2182)	34.92 (N=101)	3.43 (-0.20–8.91)	1.22 (2281)	<0.001
Circassian	29.88 (N=45)	22.92 (N=6)	6.96 (-11.8–25.77)	0.74 (49)	=0.331
Druze	52.82 (N=590)	33.06 (N=20)	19.76 (15.50–24.00)	9.11 (851)	<0.001
Jewish	27.44 (N=10238)	30.07 (N=32132)	-2.63 (-3.10–-2.19)	-10.76 (42368)	<0.001

Table 4

Influenza Vaccination Coverage by Education Stream and Service Model

Type of education system	Public Model (%)	Private Model (%)	Δ (95% CI)	T(df)	p-value
secular state	38.83 (N=10,164)	38.62 (N=19,049)	0.21 (-0.39–0.80)	0.66 (29,211)	<0.001
religious state	25.38 (N=2,410)	29.01 (N=5,696)	-3.63 (-4.56–-2.69)	-7.59 (8,104)	<0.001
Haredi/ultra-Orthodox	22.89 (N=3,029)	25.96 (N=12,621)	-3.07 (-3.95–-2.19)	-6.84 (15,648)	<0.01

Qualitative findings indicated that hesitancy toward influenza vaccination stemmed primarily from perceptions of low necessity rather than from explicit cultural or religious opposition.

In the Arab sector, influenza was often perceived as a mild illness that did not justify vaccination:

> "Many parents say: We manage without it. They don't view flu as serious and don't sign the forms." (Nurse, Arab sector)

In the ultra-Orthodox sector, hesitancy was framed in terms of intergenerational norms and the absence of prior vaccination traditions:

> "They ask: Did our parents get flu shots? If not, why should we? They don't see it as important." (Nurse, Jerusalem)

Taken together, these findings suggest that influenza vaccination uptake is shaped primarily by everyday risk perceptions and community habits rather than by structural differences in service delivery models.

Growth Screening Coverage – Grade 7

Analysis of Grade 7 growth screening coverage revealed significant differences between service delivery models, with the private model consistently outperforming the public model across nearly all cultural sectors.

The largest disparity was observed in the Bedouin sector, where coverage reached 95.07% under the private model compared to 57.41% under the public model ($p < 0.001$). Significant advantages for the private model were also found among Druze and Circassian students ($p < 0.001$). In the Arab sector, coverage was 91.21% in the private model versus 80.57% in the public model ($p < 0.001$). Among Jewish students, coverage reached 86.51% under the private model compared to 72.89% in the public model ($p < 0.001$).

A similar pattern emerged across educational streams. In the secular state system, coverage was substantially higher under the private model (97.92% vs. 67.58%, $p < 0.001$). The private model also demonstrated a statistically significant advantage in both the religious state and ultra-Orthodox systems ($p < 0.001$).

In contrast to the pattern observed for HPV vaccination-where the public model showed a distinct advantage, particularly in traditional communities-growth screening coverage consistently favored the private model across sectors. These findings suggest that for standardized, non-controversial services such as anthropometric screening, organizational and operational factors may play a more decisive role than cultural context in shaping service coverage.

Table 5
Growth Screening Coverage in Grade 7 by Cultural Sector and Service Model

Sector	Public Model (%)	Private Model (%)	Δ (95% CI)	T(df)	p-value
Arabic	80.57 (N=527)	91.21 (N=2296)	-10.64 (-12.72–-8.54)	-9.98 (2821)	<0.001
Bedouin	57.41 (N=744)	95.07 (N=86)	-37.66 (-46.11–-29.22)	-8.75 (828)	<0.001
Circassian	70.28 (N=10)	92.63 (N=12)	-22.35 (-41.66–-3.02)	-2.41 (20)	<0.001
Druze	71.47 (N=103)	93.33 (N=139)	-21.86 (-28.6–-15.1)	-6.37 (240)	<0.001
Jewish	72.89 (N=3441)	86.51 (N=13563)	-13.62 (-14.57–-12.64)	-27.67 (17002)	<0.001

Table 6
Growth Screening Coverage in Grade 7 by Education Stream and Service Model

Type of education system	Public Model (%)	Private Model (%)	Δ (95% CI)	T(df)	p-value
secular state	67.58 (N=2553)	97.92 (N=6996)	-30.34 (-7.32–-6.12)	-33.39 (9547)	<0.001
religious state	73.61 (N=874)	89.08 (N=2617)	-15.47 (-3.40–-5.25)	-17.86 (3489)	<0.001
Haredi/ultra-Orthodox	76.68 (N-1398)	85.81 (N=6496)	-9.13 (-3.79–-1.32)	-11.36 (7892)	<0.001

While quantitative findings indicated superior coverage under the private model, qualitative data provided insight into the organizational mechanisms underlying these differences. Public-sector nurses described a model of holistic and continuous care:

> "I see the child throughout the year – vaccinations, screenings, follow-up. I have a complete picture and can detect issues early." (Nurse, Southern District)

In contrast, private-sector nurses described a more segmented structure of service delivery:

> "I'm only there to vaccinate. Screenings are done by the optometrist or speech therapist. I don't always know if the child was referred or followed up." (Nurse, Private Provider, Northern District)

Some expressed concern regarding fragmented follow-up processes:

> "Sometimes I find out a child was flagged for vision problems, but the parents weren't informed. I can't follow up because I didn't do the screening." (Nurse, Private Provider, Central District)

Public-sector nurses also emphasized the relational benefits of continuity:

> "The teacher recognizes me, and the students know me. That helps communication. They open up, and I feel part of the team." (Nurse, Public Sector, Arab Sector)

Taken together, the findings suggest that the private model may be more effective in achieving high coverage for standardized screening services, likely due to task specialization and operational efficiency. However, qualitative evidence indicates that this efficiency may come at the expense of continuity of care and integrated clinical oversight. These results point to a structural trade-off between logistical performance and relational continuity in the delivery of school-based preventive services.

Vision Screening Coverage – Grade 8

Analysis of Grade 8 vision screening coverage revealed a consistent and statistically significant advantage of the private service model across all cultural sectors.

Among Arab students, coverage reached 91.41% under the private model compared to 87.31% under the public model ($p < 0.001$). In the Bedouin sector, coverage was 93.54% in the private model versus 82.67% in the public model ($p < 0.001$). Substantial differences were also observed among Druze students (91.55% vs. 81.81%, $p < 0.01$) and Circassian students (98.83% vs. 69.40%, $p < 0.01$), although the latter should be interpreted cautiously due to small sample sizes. Among Jewish students, coverage reached 85.95% under the private model compared to 70.77% under the public model ($p < 0.001$).

A similar pattern emerged across educational streams. In the secular state system, coverage was significantly higher under the private model (86.07% vs. 80.64%, $p < 0.001$). The private model also demonstrated a clear advantage in the religious state system (90.40% vs. 83.29%, $p < 0.001$) and in the ultra-Orthodox system (86.29% vs. 80.02%, $p < 0.001$).

Taken together, these findings indicate that for vision screening-similar to growth screening-the private model consistently achieves higher coverage rates across sectors and education streams. Unlike HPV vaccination, where sector-specific cultural factors played a central role, vision screening appears to be influenced primarily by structural and organizational characteristics of service delivery rather than by cultural alignment.

Table 7

Vision Screening Tests Coverage in Grade 8 by Cultural Sector and Service Model

Sector	Public Model (%)	Private Model (%)	Δ (95% CI)	T(df)	p-value
Arabic	87.31 (N=491)	91.41 (N=2173)	-8.1 (-6.88–-2.97)	-4.02 (2662)	<0.001
Bedouin	82.67 (N=711)	93.54 (N=54)	-10.87 (-17.25–-4.99)	-3.34 (793)	<0.001
Circassian	69.40 (N=10)	98.83 (N=12)	-29.43 (-52.56–-6.30)	-2.65 (20)	<0.01
Druze	81.81 (N=104)	91.55 (N=137)	-9.74 (-16.47–-3.00)	-2.89 (239)	<0.01
Jewish	70.77 (N=3257)	85.95 (N=13915)	-15.18 (-7.29–-5.05)	-10.80 (16572)	<0.001

Table 8
Vision Screening Tests Coverage in Grade 8 by Education Stream and Service Model

Type of education system	Public Model (%)	Private Model (%)	Δ (95% CI)	T(df)	p-value
secular state	80.64 (N=2407)	86.07 (N=6771)	-5.43 (-6.64–-3.81)	-7.25 (9181)	<0.001
religious state	83.29 (N=1840)	90.40 (N=2598)	-7.11 (-8.86–-5.35)	-7.95 (3436)	<0.001
Haredi/ultra-Orthodox	80.02 (N=1328)	86.29 (N=6365)	-6.24 (-7.95–-4.51)	-7.28 (7691)	<0.001

While the quantitative findings demonstrate a consistent advantage of the private model in vision screening coverage across sectors and education streams, qualitative data provide important insight into the organizational mechanisms underlying these differences.

In the public sector, vision screenings are performed by school nurses themselves, who are already responsible for multiple schools and a broad range of tasks. In contrast, the private model relies on specialized professionals, such as optometrists and audiologists, to conduct these screenings, enabling more focused and operationally efficient implementation.

Nurses described this structural distinction:

> "I do everything- vaccines, growth checks, and vision tests. It's a lot, especially with so many schools to cover." (Nurse, Public Sector)

> "In our team, we have professionals who specialize in vision. That way, every student is seen quickly and thoroughly." (Nurse, Private Provider)

These accounts suggest that the higher screening coverage observed under the private model may be attributed not to cultural alignment, but rather to task specialization and workload distribution. The findings therefore reinforce the interpretation that, for standardized technical services such as vision screening, organizational design plays a central role in shaping service performance.

Health Education Coverage – Grades 1–9

Health education demonstrated the most pronounced disparities between service delivery models across all services examined. The private model consistently achieved substantially higher coverage rates than the public model in every cultural sector and educational stream.

Across cultural sectors, the gaps were particularly large. Among Jewish students, coverage reached 64.50% under the private model compared to 19.54% under the public model ($p < 0.001$). Similarly large differences were observed among Bedouin students (71.97% vs. 14.46%, $p < 0.001$), Druze students (70.37% vs. 37.81%, $p < 0.001$), and Arab students (71.30% vs. 46.94%, $p < 0.001$). All differences were statistically significant.

A comparable pattern emerged across educational streams. In the secular state system, private model coverage reached 67.51% compared to 26.60% in the public model (p < 0.001). In the religious state system, coverage was 68.70% versus 23.79% (p < 0.001), and in the ultra-Orthodox system, 61.02% versus 11.58% (p < 0.001). These findings indicate a uniform structural advantage of the private model in delivering health education, irrespective of cultural or educational context.

Table 9

Health Education Coverage in Grades 1–9 by Cultural Sector and Service Model

Sector	Public Model (%)	Private Model (%)	Δ (95% CI)	T(df)	p-value
Arabic	46.94 (N=1451)	71.30 (N=5412)	24.36 (-26.54–-22.17)	-21.83 (6861)	<0.001
Bedouin	14.46 (N=1609)	71.97 (N=248)	-57.51 (-60.99–-54.01)	-32.31 (1855)	<0.001
Circassian	14.66 (N=15)	44.39 (N=18)	-29.73 (-55.89–-4.58)	-2.40 (31)	<0.05
Druze	37.81 (N=316)	70.37 (N=467)	-32.56 (-37.82–-27.30)	-12.14 (781)	<0.001
Jewish	19.54 (N=7802)	64.50 (N=30522)	-44.96 (-45.95–-43.96)	-88.53 (38322)	<0.001

Table 10

Health Education Coverage in Grades 1–9 by Education Stream and Service Model

Type of education system	Public Model (%)	Private Model (%)	Δ (95% CI)	T(df)	p-value
secular state	26.60 (N=6848)	67.51 (N=18616)	-40.89 (-41.95–-39.86)	-76.45 (25662)	<0.001
religious state	23.79 (N=1932)	68.70 (N=6030)	-44.91 (-46.86–-42.96)	-45.19 (7960)	<0.001
Haredi/ultra-Orthodox	11.58 (N=2413)	61.02 (N=11839)	-49.44 (-51.30–-47.58)	-54.04 (14250)	<0.001

Qualitative interviews provided insight into the organizational factors underlying these disparities. In the public sector, school nurses are responsible for delivering health education across multiple grades while simultaneously managing vaccinations and screening services, often across 30 or more schools. Nurses described significant time constraints and insufficient institutional support:

> "I'm responsible for 28 schools. Of course, I can't reach them all with full content. I do what I can, but there just isn't enough time." (Nurse, Public Sector, Haifa District)

> "Health education is always the last priority. There's no time, no extra support, and we get almost no training in the field." (Nurse, Public Sector, Jewish Sector)

In contrast, the private model employs dedicated health educators rather than nurses to deliver structured educational programs. This specialization allows for greater logistical coverage and standardized implementation:

> "We have a health educator who specializes in nutrition and adolescence. He moves between classrooms with presentations and questionnaires – it's all very professional and well-organized." (Nurse, Private Sector, Tel Aviv District)

Taken together, the findings indicate that disparities in health education coverage are primarily structural rather than cultural. Unlike vaccination services-where sector-specific cultural dynamics influenced uptake-health education coverage appears to be driven largely by resource allocation, workforce structure, and task specialization. The private model's reliance on dedicated educators enables broader and more consistent program implementation, whereas the public model's reliance on overstretched school nurses constrains delivery capacity.

Summary

The findings indicate a complex interaction between cultural identity, educational context, and service delivery model in shaping access to school-based health services. The public model demonstrated a clear advantage in the delivery of HPV vaccination, particularly in traditional and minority communities, where institutional trust and community legitimacy appeared to play a central role. In contrast, for standardized and technical services such as growth screening, vision assessments, and structured health education programs, the private model consistently showed an operational advantage, largely attributable to task specialization and more efficient organizational design.

In the case of influenza, vaccination, no consistent advantage was observed for either service model, suggesting that uptake in this domain is influenced more strongly by everyday risk perceptions and perceived necessity than by structural differences in service delivery.

The integration of quantitative and qualitative findings underscores that promoting equity in School Health Services requires both culturally responsive practices and careful attention to organizational structure. Achieving equitable access across Israel's diverse student population depends not only on cultural alignment but also on the operational capacity and institutional configuration of the service delivery model.

Discussion

The findings of this study demonstrate that cultural identity, educational stream, and the model of service provision (public vs. private) jointly and significantly shape students' utilization of School Health Services (SHS) in Israel. The disparities observed cannot be attributed solely to logistical or socioeconomic barriers; rather, they reflect deeper differences in social perceptions, gender norms, institutional trust, and the perceived cultural appropriateness of health messaging (Larson et al., 2018). These results align with existing literature emphasizing that uptake of preventive interventions is embedded within broader sociocultural contexts, rather than determined exclusively by physical access or service availability.

The framework of cultural competence highlights the necessity of aligning health services with the values, beliefs, and normative structures of target populations (Betancourt et al., 2003). In parallel, the concept of institutional trust provides an important explanatory lens (Gilson, 2003). Public-sector nurses, who are embedded within local communities and often maintain long-term relationships with schools and families, appear to benefit from relational legitimacy and accumulated trust, particularly in culturally sensitive domains (Handtke et al., 2019). By contrast, private providers-although potentially more operationally efficient-may lack the same degree of social embeddedness.

The case of HPV vaccination illustrates this dynamic clearly. The low vaccination rates observed in ultra-Orthodox and religious state school systems reflect not only organizational differences but also culturally rooted resistance mechanisms, including concerns related to modesty, fertility, and sexuality (Williams et al., 2019). Gender norms emerged as a central axis of resistance, particularly where the intervention was perceived as intersecting with sexual and reproductive health. In such contexts, issues of legitimacy and trust became decisive factors influencing uptake. These findings are consistent with broader research suggesting that vaccine hesitancy is often rooted not in rejection of biomedical science per se, but in perceived misalignment between interventions and local moral frameworks (Larson et al., 2018).

At the same time, the study identifies meaningful intra-group variation. Certain Druze and Arab schools operating under public provision achieved particularly high uptake, suggesting that local leadership, familiarity with health personnel, and strong linkages between schools and community clinics can mitigate or even overcome cultural barriers. Cultural identity, therefore, does not operate as a deterministic variable but interacts dynamically with contextual factors, including service delivery structure and its practical implementation (Patel, 2019).

A central contribution of this study lies in differentiating between types of services and demonstrating that the influence of cultural identity varies according to the normative meaning attached to the intervention. Norm-sensitive services-such as HPV vaccination, which intersect with moral values, gender norms, and perceptions of sexuality-depend heavily on relational legitimacy, institutional trust, and cultural alignment. In contrast, standardized and technical services—such as growth measurements, vision screening, and structured health education programs—are shaped primarily by organizational capacity, resource allocation, and task specialization. Cultural and structural determinants are therefore not interchangeable; their relative weight shifts depending on the symbolic and social significance of the service (Larson et al., 2018; Handtke et al., 2019).

The case of influenza vaccination further reinforces this distinction. In the absence of strong moral or gender-related symbolism, influenza uptake appeared to be driven largely by perceived necessity and everyday risk assessment rather than ideological resistance. This variation underscores the importance of distinguishing between value-laden interventions and routine preventive measures when designing culturally responsive health policies.

The findings also contribute to broader debates concerning privatization in public health systems. The partial privatization of SHS in Israel reveals a structural tension between operational efficiency and relational embeddedness. Private providers appear to excel in standardized, high-throughput services due to specialization and streamlined logistics. Conversely, public-sector personnel demonstrate greater effectiveness in culturally sensitive areas where trust and legitimacy are critical. Hybrid systems must therefore carefully balance efficiency with social embeddedness, recognizing that the relative importance of each dimension varies by service type (Handtke et al., 2019).

The policy implications are substantial. A uniform, one-size-fits-all approach to SHS provision risks reinforcing existing inequalities. Instead, differentiated strategies grounded in cultural and contextual understanding are required (Ozawa et al., 2016). Such strategies may include recruiting and training health professionals from within the communities themselves; adapting educational materials to align with gender norms and cultural sensitivities; partnering with religious and educational leaders; and revising performance metrics to capture not only quantitative outputs but also trust-building processes and cultural legitimacy.

This study has several limitations. First, it relies on institutional coverage data that do not include individual-level clinical information or subjective motivations for acceptance or refusal. Second, the qualitative component incorporated only professional stakeholders and did not include parents' or students' perspectives, which could provide further insight into experiential and emotional dimensions of service engagement. Third, the analysis of health education was limited to exposure rates and did not assess content quality or reception.

In conclusion, the utilization of School Health Services in Israel is shaped not only by infrastructure and resources but also-perhaps more fundamentally-by the degree of cultural alignment and relational legitimacy embedded within service delivery. In diverse societies, cultural responsiveness is not merely an ethical aspiration but a structural determinant of service effectiveness (Betancourt et al., 2003; Ozawa et al., 2019). Organizational design and cultural legitimacy function as complementary conditions for equitable public health delivery, rather than as interchangeable alternatives.

Conclusion

The findings of this study demonstrate that cultural identity, educational stream, and service delivery model interact in shaping students' access to and utilization of School Health Services in Israel. Disparities were particularly evident in norm-sensitive interventions, such as HPV vaccination, where cultural beliefs, gender norms, and institutional trust played a decisive role. In contrast, standardized and technical services were influenced primarily by organizational capacity and operational design.

These patterns suggest that the effectiveness of a given service model depends on the symbolic and normative meaning attached to the intervention itself. Public provision showed advantages in culturally sensitive domains requiring relational legitimacy and community trust, whereas private provision demonstrated strengths in standardized, high-throughput services characterized by logistical efficiency.

The findings underscore that cultural responsiveness and organizational design are complementary-rather than interchangeable-determinants of equitable service delivery. In diverse societies, promoting health equity requires not only infrastructure and resource allocation, but also institutional legitimacy, cultural alignment, and context-sensitive implementation strategies.

Policymakers must therefore move beyond uniform service frameworks and adopt differentiated approaches that integrate professional expertise with community engagement. Only systems that simultaneously address structural capacity and cultural complexity can ensure equitable and sustainable school-based health outcomes across heterogeneous populations.

References

Betancourt, J. R., Green, A. R., Carrillo, J. E., & Ananeh-Firempong 2nd, O. (2003). Defining cultural competence: a practical framework for addressing racial/ethnic disparities in health and health care. *Public Health Reports*, *118*(4), 293.

Dadon, Z. (2025). *Evaluation of school health services in Israel: 2011–2022* (Doctoral dissertation, Ben-Gurion University of the Negev). BGU Institutional Repository. https://cris.bgu.ac.il/en/studentTheses/evaluation-of-school-health-services-in-israel-2011-2022/

Dadon, Z., Bayer, Y. M., Rosenthal, A., & Gdalevitz, M. (2024). School health services in the Southern District of Israel-Between privatization and nationalization. *Israel Journal of Health Policy Research, 13*, Article 59. https://doi.org/10.1186/s13584-024-00647-3

Dubé, È., Ward, J. K., Verger, P., & MacDonald, N. E. (2021). Vaccine hesitancy, acceptance, and anti-vaccination: Trends and future prospects for public health. *Annual Review of Public Health, 42*(1), 175–191.

Gilson, L. (2003). Trust and the development of health care as a social institution. *Social Science & Medicine*, *56*(7), 1453–1468.

Handtke, O., Schilgen, B., & Mösko, M. (2019). Culturally competent healthcare: A scoping review of strategies implemented in healthcare organizations and a model of culturally competent healthcare provision. *PLOS ONE, 14*(7), e0219971.

Jacobson, A., Spitzer, S., Gorelik, Y., & Edelstein, M. (2023). Barriers and enablers to vaccination in the ultra-orthodox Jewish population: A systematic review. *Frontiers in Public Health, 11*, 1244368.

Jongen, C., McCalman, J., & Bainbridge, R. (2018). Health workforce cultural competency interventions: A systematic scoping review. *BMC Health Services Research, 18*(1), 232.

Larson, H. J., Clarke, R. M., Jarrett, C., Eckersberger, E., Levine, Z., Schulz, W. S., & Paterson, P. (2018). Measuring trust in vaccination: A systematic review. *Human Vaccines & Immunotherapeutics, 14*(7), 1599–1609.

Levi, B., Davidovitch, N., & Adut, R. (2022). *School health services in Israel: Between privatization and nationalization*. Taub Center for Social Policy Studies in Israel.

Marmot, M. (2020). Health equity in England: The Marmot review 10 years on. *BMJ*, *368*.

Ozawa, S., Paina, L., & Qiu, M. (2016). Exploring pathways for building trust in vaccination and strengthening health system resilience. *BMC Health Services Research, 16*(Suppl 7), 639.

Patel, M. (2019). National update on measles cases and outbreaks-United States, January 1–October 1, 2019. *MMWR. Morbidity and Mortality Weekly Report, 68*.

Rosen, B., Waitzberg, R., Israeli, A., Hartal, M., & Davidovitch, N. (2021). Addressing vaccine hesitancy and access barriers to achieve persistent progress in Israel's COVID-19 vaccination program. *Israel Journal of Health Policy Research, 10*(1), 43.

Saldaña, J. (2021). *The coding manual for qualitative researchers* (4th ed.). Sage Publications.

Smooha, S. (2023). Ethnic and cultural diversity in Israeli society. In *The Routledge handbook of Judaism in the 21st century* (pp. 68–88). Routledge.

Williams, D. R., Lawrence, J. A., & Davis, B. A. (2019). Racism and health: Evidence and needed research. *Annual Review of Public Health, 40*(1), 105–125.

World Health Organization. (2021). *Making every school a health-promoting school: Global standards and indicators.*

About the Author

Dr. Tzion Dadon works at Ben Gurion University of the Negev, in Israel, and with the Ministry of Health, in Israel. ORCID 0009-0001-9852-4245.

Discussion Questions

1. How can school-based health services be adapted to better align with the cultural expectations of minority communities in Israel?

2. What are the long-term implications of privatized service delivery models on health equity in school settings?

3. In what ways might collaboration with religious or community leaders enhance trust and uptake of health services?

To Cite this Article

Dadon, T. (2025, Fall). Cultural disparities in the use of student health services in Israel: Routine vaccinations, health education, and screening tests. *Journal of Multidisciplinary Research, 17*(2), 5–22.

Journal of Multidisciplinary Research, Vol. 17, No. 2, Fall 2025, 23–31.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Exploring the Impact of COVID-19 on Smoking Cessation: A Comprehensive Literature Review

Linnette Wong, Ph.D.
Weber State University

Abstract

The COVID-19 pandemic has significantly influenced smoking cessation behaviors in the United States, with health concerns, stress, and awareness of smoking-related risks playing key roles in smokers' attempts to quit. This literature review synthesizes findings from multiple quantitative and qualitative studies that researchers conducted during the pandemic, examining how COVID-19 affected smoking behaviors, motivations for cessation, and the use of cessation resources. Key themes identified include the heightened awareness of the respiratory risks associated with smoking, the psychological impact of stress, and the limited yet increasing use of cessation resources. Fears of severe COVID-19 outcomes motivated smokers, especially those with pre-existing health conditions, yet many struggled with relapse due to stressors such as isolation, financial instability, and lifestyle disruptions. Despite some success in motivating quit attempts, barriers such as lack of access to resources and demographic differences (e.g., age, socioeconomic status) limited the long-term effectiveness of cessation efforts. The review also highlights gaps in the literature, including the need for longitudinal studies to track long-term cessation success and relapse, and calls for targeted health promotion campaigns that address both behavioral and emotional challenges. Overall, this review provides important insights into the complex factors influencing smoking cessation during the pandemic and suggests avenues for future research and public health interventions aimed at improving smoking cessation outcomes, particularly in high-risk populations.

Keywords

COVID-19 pandemic, smoking cessation, health concerns, stress, high-risk populations, relapse, health promotion campaigns

Introduction

The novel coronavirus (SARS-CoV-2) emerged in late 2019, sparking the COVID-19 pandemic, which quickly became one of the most severe global public health crises in modern history. Since its emergence, the virus has significantly impacted not only public health but also the global economy and social structures, causing widespread economic disruptions and escalating social inequality. As of 2023, COVID-19 has resulted in millions of infections and deaths worldwide, with vulnerable populations, including the elderly, those with pre-existing health conditions, and individuals with compromised immune systems, facing particularly high risks (Almeda & Gómez-Gómez, 2022). The pandemic has overwhelmed healthcare systems, causing shortages in resources, increasing strain on medical staff, and disrupting routine healthcare services. The pandemic also has had profound effects on mental health, with prolonged isolation, heightened fear of infection, economic stress, and disruptions to daily life leading to a marked increase in mental health conditions, including anxiety, and depression (Bandi et al., 2022).

In terms of health behaviors, COVID-19 has created a complex and multifaceted landscape. While some individuals adopted healthier behaviors—such as increased physical activity and improved diets—others turned to harmful coping mechanisms, including increased alcohol consumption and smoking (Turan & Turan, 2023). Smoking, in particular, is of significant concern because COVID-19 primarily affects the respiratory system, leading to severe pneumonia, acute respiratory distress syndrome (ARDS), and long-term respiratory complications (Nyman et al., 2021). Smoking exacerbates these respiratory impacts, putting smokers at a higher risk for severe symptoms because of cumulative lung damage, impaired immune responses, and compromised respiratory function that tobacco use cause (Almeda & Gómez-Gómez, 2022).

In addition to direct health concerns, the pandemic has presented a unique opportunity to address smoking behaviors. Many smokers, especially those with pre-existing health conditions, have been motivated to quit as they become more aware of the heightened risks that smoking in the context of a respiratory virus pose. Indeed, some studies have shown that the pandemic, with its health-related fears and increased public health messaging, has led to a rise in smoking cessation attempts, as individuals are more conscious of the link between smoking and respiratory illnesses, particularly COVID-19 (Turan & Turan, 2023; Almeda & Gómez-Gómez, 2022). At the same time, the pandemic's profound effects on mental health and lifestyle—such as increased stress due to economic instability, job loss, and social isolation—have contributed to difficulties in maintaining smoking cessation efforts, often leading to relapse (Nyman et al., 2021Brody et al., 2021).

COVID-19 has, thus, created a paradox for smoking cessation efforts: While it has heightened awareness of the dangers of smoking, it also has exacerbated challenges to successful cessation. Factors such as stress, lack of access to cessation resources, and social and economic vulnerabilities have all played roles in both encouraging and discouraging smoking cessation efforts (Bandi et al., 2022). This literature review aims to explore the complex factors that have shaped smoking cessation behaviors during the COVID-19 pandemic, with a particular focus on how health concerns, stress, demographic differences, and access to cessation resources have influenced these behaviors.

In understanding these factors, the review synthesizes findings from a range of studies that researchers conducted during the pandemic, combining both quantitative and qualitative data to provide a comprehensive overview of smoking cessation behaviors in the United States. By examining both the motivations for cessation and the barriers that smokers faced, this review seeks to offer valuable insights for future public health interventions and future research on smoking cessation in the post-pandemic era. Ultimately, this review emphasizes the need for targeted interventions that account for the multifaceted nature of smoking behavior, including both the psychological and environmental challenges that smokers face, particularly in times of crisis.

Method

This literature review synthesizes findings from a comprehensive selection of peer-reviewed studies published between 2020 and 2023, focusing on the impact of the COVID-19 pandemic on smoking cessation in the United States. The researcher sourced the selected studies from well-established databases such as PubMed, Google Scholar, and ScienceDirect. The researcher chose these sources to ensure methodological rigor and relevance to the current research question. The review includes both quantitative and qualitative studies, drawing from national surveys, longitudinal studies, and smaller cohort analyses to capture a broad spectrum of smoking cessation behaviors during the pandemic.

The inclusion criteria for the studies were as follows:

- **Study Focus**: Only studies directly addressing smoking cessation during the COVID-19 pandemic were included. This encompassed studies on smoking cessation attempts, motivations to quit, and utilization of cessation resources during the pandemic.
- **Population**: Studies focused on U.S. adults, including both smokers and non-smokers, were prioritized. The researcher also considered the relevance of subgroups, such as smokers with pre-existing health conditions or those from vulnerable populations.
- **Study Design**: The researcher included both quantitative and qualitative studies, such as cross-sectional surveys, longitudinal studies, and cohort studies that measured smoking behaviors before and during the pandemic. Qualitative research exploring personal motivations and barriers to cessation was also included.
- **Time Frame**: Studies published between 2020 and 2023 were included to ensure the findings reflect the ongoing pandemic and its immediate effects on smoking behavior.
- **Language**: Only studies published in English were considered.
- **Data Type**: The researcher required the studies to have clearly defined data collection methods, including statistical analysis or qualitative thematic analysis, with original data that indicated trends in smoking cessation efforts during the pandemic.

After screening the articles by title and abstract, the researcher identified 25 studies for potential inclusion. The researcher then carefully reviewed these studies for eligibility based on the criteria above. In total, the researcher selected four studies for full-text review and inclusion in this literature review. The following table summarizes the key studies:

Table 1
Summaries of Key Studies

Title of the Paper	Author(s)	Year of Publication	Sample Size	Data Collection Tools	Key Findings
"Impacts of the COVID-19 pandemic on smoking cessation success"	Turan & Turan	2023	187	Surveys	14.7 % of smokers attempted to quit due to the pandemic. Health concerns, stress, and economic impacts were significant motivators. Relapse occurred due to stress and financial hardship.
"The Impact of the COVID-19 pandemic on smoking consumption: A Systematic review of longitudinal studies"	Almeda & Gómez-Gómez	2022	58,052	Surveys	The decrease in smoking consumption during the pandemic could be related to the fear of becoming infected by COVID-19, the advancement of COVID-19, and the reduction in social gatherings.
"Changes in Smoking Cessation–Related Behaviors among US adults during the COVID-19 Pandemic"	Bandi, et al.	2022	788,008	Surveys	These findings suggest a decrease in smoking cessation activity during the COVID-19 pandemic and the need to reengage smokers in evidence-based quitting strategies.
"Associations between COVID-19 risk perceptions and smoking and quitting behavior among U.S. adults"	Nyman, et al.	2021	1,223	Surveys	Smokers with higher stress levels were more likely to increase smoking. Those motivated by health concerns were more likely to quit. Stress management was found to be crucial for cessation.

Findings and Themes

Health Concerns and Motivations for Cessation

A consistent theme across all the studies was the impact of heightened health concerns on smoking cessation efforts. As COVID-19 spread, the public became increasingly aware of the respiratory risks associated with smoking. Smokers, particularly those with pre-existing health conditions such as cardiovascular disease or chronic respiratory conditions, recognized that their vulnerability to severe COVID-19 outcomes could become worse with continued smoking (Almeda & Gómez-Gómez, 2022). For many, this awareness prompted cessation attempts, with studies such as Turan and Turan (2023) showing that health concerns were among the most frequently cited reasons for attempting to quit. The fear of respiratory distress, hospitalization, and even death due to COVID-19 acted as a potent motivator for quitting. These findings align with other research, which indicates that health-related fears often serve as critical triggers for smoking cessation (Nyman et al., 2021).

Stress and Mental Health Challenges

Stress emerged as a major barrier to smoking cessation during the pandemic. The psychological toll of isolation, job insecurity, economic strain, and health anxiety exacerbated smoking behaviors, with some individuals increasing their smoking as a form of stress relief (Nyman et al., 2021). However, the relationship between stress and smoking behavior was complex. While some smokers used cigarettes as a coping mechanism, others became more motivated to quit due to heightened stress levels. Bandi and others (2022) highlighted that smokers who reported significant stress were more likely to attempt quitting, but many relapsed due to ongoing emotional struggles. Thus, stress management emerged as a key factor influencing cessation success, indicating the need for integrated mental health support in smoking cessation programs.

Increased Awareness of Smoking-Related Risks

The COVID-19 pandemic significantly increased smokers' awareness of the health risks associated with smoking. Public health campaigns, along with the constant media coverage of COVID-19’s effects on the respiratory system, helped highlight the dangers of smoking, particularly in the context of respiratory diseases. Studies by Turan and Turan (2023) and Almeda and Gómez-Gómez (2022) McClure and others (2021) both emphasized that the pandemic heightened smokers’ awareness of the urgency to quit, particularly as COVID-19 highlighted the vulnerability of the respiratory system to both smoking and the virus. This increased awareness was particularly relevant for smokers with underlying health conditions, who were at even greater risk of severe COVID-19 outcomes.

Use of Cessation Resources

Despite the increased awareness of smoking-related risks, the studies revealed that many smokers did not utilize available cessation resources, such as quitlines, online counseling, and telehealth services. While 22% of smokers made cessation attempts during the pandemic, Bandi et al. (2022) found that only a small proportion accessed professional resources. This suggests a significant gap in the accessibility or utilization of cessation services, despite the availability of digital resources and increased outreach efforts by public health organizations. Turan & Turan (2023) further noted that, while many smokers were aware of available resources, factors such as lack of motivation, perceived stigma, or simply a lack of knowledge about these resources may have contributed to low engagement rates.

Relapse and Barriers to Sustained Cessation

A major challenge identified in the studies was the difficulty many smokers faced in maintaining cessation, with many experiencing relapses due to the ongoing stressors of the pandemic. Studies by Almeda and Gómez-Gómez (2022) and Nyman and others (2021) found that the stress associated with isolation, financial instability, and health concerns was a significant factor in relapse. Despite initial success in quitting, many smokers turned back to cigarettes as a way to manage overwhelming stress or emotional discomfort. This suggests that successful cessation requires not only initial motivation but also sustained support, particularly in times of crisis.

Demographic Differences in Cessation Efforts

Demographic factors such as age, socioeconomic status, and pre-existing health conditions played a crucial role in smoking cessation efforts. Younger smokers were more likely to engage with digital resources, such as online quit programs, while older smokers tended to rely on healthcare providers for guidance and support (Bandi et al., 2022). Moreover, smokers from lower socioeconomic backgrounds faced greater barriers to cessation, including limited access to healthcare resources and higher stress levels related to economic instability. These findings underscore the importance of tailoring cessation programs to address the specific needs of different demographic groups.

Behavioral and Environmental Changes

The behavioral changes brought about by the pandemic, including remote work, social isolation, and altered daily routines, significantly influenced smoking behaviors. For some smokers, the quarantine period provided an opportunity to quit, as fewer social pressures and more time at home allowed for better focus on cessation. On the other hand, for others, the isolation and disruption of daily routines exacerbated smoking habits, with increased stress and boredom leading to more frequent smoking (Nyman et al., 2021). These findings highlight the importance of considering both environmental and psychological factors in smoking cessation efforts.

Discussion

The findings of this literature review provide a comprehensive overview of the impact of the COVID-19 pandemic on smoking cessation behaviors in the U.S. during this unprecedented period. Several key factors—including health concerns, stress, awareness of smoking-related risks, the use of cessation resources, demographic differences, and changes in daily routines—contribute to the variations observed in smoking cessation attempts. Ultimately, these factors create a complex environment where some smokers successfully quit, while others face considerable barriers to achieving long-term cessation.

Health Concerns and Motivations for Cessation emerged as one of the strongest motivators for quitting smoking during the pandemic. Awareness of COVID-19's respiratory effects highlighted the dangers that smoking posited not only to individual smokers but also to public health. Data from studies indicate that many smokers recognized their vulnerability to severe health challenges and were motivated to quit as a direct response to these fears (Almeda & Gómez-Gómez, 2022). This newfound health awareness presents a unique opportunity for public health campaigns to engage smokers effectively, promoting cessation as both a personal health imperative and a collective responsibility.

However, stress and mental health challenges were identified as significant barriers to smoking cessation. The pandemic led to heightened levels of stress due to various factors, including isolation, financial difficulties, and health anxieties (Bandi et al., 2022). For some smokers, this stress renewed their reliance on smoking as a coping mechanism, while simultaneously motivating others to quit. Therefore, recognizing this dual relationship underscores the importance of addressing mental health and stress management in smoking cessation programs (Nyman et al., 2021). Initiatives that integrate psychological support can create a more comprehensive approach to cessation efforts.

Additionally, the use of cessation resources is critical for successful quitting. Despite the urgent need and increased attempts to quit, the study findings indicate underutilization of available resources, such as quitlines, online counseling, and telehealth services (Bandi et al., 2022). This gap highlights the necessity for public health organizations to enhance the communication and accessibility of cessation resources. Tailoring outreach efforts to reach diverse populations is imperative, especially since demographic differences manifest in resource engagement patterns (Bandi et al., 2022). Younger smokers more frequently utilized digital platforms, while older smokers preferred traditional healthcare interactions. This suggests that smoking cessation programs must be customized to fit the specific needs and preferences of different demographic groups to maximize their effectiveness.

Limitations and Strengths of this Literature Review

Although this review offers valuable insights into the interplay between COVID-19 and smoking cessation behaviors, it is essential to acknowledge its limitations. A primary limitation is that few longitudinal studies analyze long-term cessation outcomes in the context of the pandemic. The majority of the literature focused on short-term cessation attempts, which, while informative, may not fully reflect ongoing smoking behaviors or the sustainability of cessation efforts. Furthermore, many of the studies included were reliant on self-reported data, which may contain biases that lead to underreporting of smoking habits or overreporting of cessation intentions.

Conversely, the strengths of this literature review lie in its comprehensive exploration of a multitude of factors influencing smoking cessation during the pandemic. By synthesizing findings from various academic sources, it constructs a multifaceted understanding of how COVID-19 has influenced smoking behavior across different populations. Integration of both quantitative and qualitative studies permits a well-rounded perspective, bridging statistical data with in-depth insights into psychological and social factors pertinent to smoking cessation.

Implications for Health Promotion

The reviews' findings carry significant implications for public health initiatives. The pandemic's role in raising health awareness around smoking necessitates that health promotion campaigns leverage this momentum to emphasize the respiratory risks linked to smoking while connecting these risks to COVID-19 outcomes. Targeted cessation programs should be developed for at-risk populations, including those with pre-existing health conditions or those from lower socioeconomic backgrounds. Additionally, health promotion strategies must include stress management techniques to empower individuals to navigate the unique challenges posed by the pandemic, given that stress emerged as a critical barrier to cessation (Nyman et al., 2021).

Future health promotion efforts should also aim to improve access to cessation resources. The studies indicate that many smokers are not utilizing available resources, likely due to a lack of awareness or barriers to accessibility. Organizations must explore digital and telehealth platforms as means to enhance engagement, particularly for younger demographics who are more adept with technology. Community-based outreach may also enhance the reach of cessation resources to those traditionally underserved by the healthcare system.

Implications for Future Research

This review identifies several avenues for future investigation into smoking cessation during the pandemic. There is a pressing need for longitudinal studies that assess smoking behaviors over time, with a focus on the long-term success of cessation efforts and relapse rates post-pandemic. Such studies would yield insights into the lasting impacts of the pandemic on smoking behavior. Additionally, more qualitative research exploring the barriers to cessation resource utilization in vulnerable populations is necessary to enhance public health interventions aimed at bolstering engagement with available support.

Research efforts should also delve into the role of social determinants of health—such as socioeconomic status and education—on smoking cessation behavior during COVID-19. Recognizing how these determinants shape smoking patterns will facilitate the development of tailored interventions that cater to diverse community needs. Finally, the complexities of how stressors (e.g., economic fallout, isolation, illness fears) interact and influence smoking behavior warrant further examination, allowing for more nuanced approaches to cessation strategies that address both behavioral and emotional facets.

Conclusion

In conclusion, the COVID-19 pandemic has significantly impacted smoking cessation efforts in the United States, presenting both challenges and opportunities. While many smokers found motivation to quit due to heightened health concerns, numerous barriers—often intertwined with stress, limited access to resources, and demographic factors—challenged sustained cessation. The pandemic strengthens the call for targeted interventions that acknowledge the multifaceted nature of smoking behavior, emphasizing the interplay of health, stress, and social factors. These findings underscore the urgent need for integrative mental health support within cessation programs and a robust effort to improve access to cessation resources, particularly through digital platforms. Despite the limitations inherent in the reviewed studies, this literature provides a crucial foundation for future research and public health initiatives geared toward improving smoking cessation outcomes, particularly in times of crisis.

References

Almeda, N., & Gómez-Gómez, I. (2022). The Impact of the COVID-19 pandemic on smoking consumption: A Systematic review of longitudinal studies. *Frontiers in Psychiatry*, *13*, 941575. https://doi.org/10.3389/fpsyt.2022.941575

Bandi, P., Asare, S., Majmundar, A., Xue, Z., Han, X., Westmaas, J. L., Nargis, N., & Jemal, A. (2022). Changes in smoking cessation-related behaviors among US adults during the COVID-19 pandemic. *JAMA Network Open*, *5*(8), e2225149. https://doi.org/10.1001/jamanetworkopen.2022.25149

Nyman, A. L., Spears, C. A., Churchill, V., Henderson, K. C., Massey, Z. B., Reynolds, R. M., & Huang, J. (2021). Associations between COVID-19 risk perceptions and smoking and quitting behavior among U.S. adults. *Addictive Behaviors Reports*, *14*, 100394. https://doi.org/10.1016/j.abrep.2021.100394

Turan, P. A., & Turan, O. (2023). Impacts of the COVID-19 pandemic on smoking cessation success. *African Health Sciences*, *23*(3), 431–436. https://doi.org/10.4314/ahs.v23i3.50

About the Author

Linnette Wong, Ph.D., is an Associate Professor of Health Promotion in the Department of Health, Physical Education, and Recreation at Weber State University. She earned her Doctorate in Health Behavior with a minor in Inquiry Methodology from Indiana University Bloomington. Dr. Wong's teaching and research interests encompass community health, multicultural health, health education, global health, health program planning and evaluation, substance use among minority populations, and health disparities within underserved communities. ORICD 0009-0008-2291-0140.

Discussion Questions

1. How do health concerns related to COVID-19 influence smokers' motivation to initiate and sustain smoking cessation efforts?

2. What psychological and environmental factors, such as stress and access to resources, impact the success and relapse rates of smokers attempting to quit during the pandemic?

3. How can public health interventions address demographic disparities and improve engagement with smoking cessation resources, especially among vulnerable populations during health crises like COVID-19?

To Cite this Article

Wong, L. (2025, Fall). Exploring the impact of COVID-19 on smoking cessation: A comprehensive literature review. *Journal of Multidisciplinary Research, 17*(2), 23–31.

“Arenal Costa Rica”
Costa Rica
2023

Photography by Nassim Harosh.

Journal of Multidisciplinary Research, Vol. 17, No. 2, Fall 2025, 33–53.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

All Rise! The Artificial Intelligence Legal Assistant is Sitting Online

Attilio Costabel, Esq.
St. Thomas University College of Law

Abstract

This article addresses the status and consequences of Artificial Intelligence (AI) entry into the legal world. AI has shifted from experimental pilots to core integration in both business operations and daily human life. Consumers use AI for texts and emails, personal finances, travel, suggesting products, handling finances, and receiving public services.

The legal world has not escaped the influx of AI. This article aims at addressing many issues and developments of the interaction with the nationwide legislation, effective and proposed, with the users (courts and professionals) and the type of use that are made in the performance of legal services and activities. Each of these segments has received and is receiving criticisms that the article will summarize.

The article ends with reference to the Florida's legal world, where both the State's Supreme Court and the State's Bar delivered evaluation of the use that the courts and the profession are making and should make of generative AI – not to mention a legislative proposal by the governor containing rules on the use of AI that has not yet received approval.

The article concludes with an ambitious proposition directed to all the bars of the nation to introduce an AI section into their bar exams that the candidates would take upon dedicated AI instruction courses.

Keywords

artificial intelligence, artificial legal assistant, artificial arbitrator, traditional AI, generative AI, machine learning, legal tech

Introduction

In 2025, the influx of Artificial Intelligence (AI) has shifted from experimental pilots to core integration in both business operations and daily human life. A 'tracker" on Westlaw Practical Law link[1] gives extensive coverage of the extent of interaction of AI with the world and of some major recent developments of law and regulation.

AI has become an invasive part of our lives: personal, commercial, professional and legal. Common consumers use AI for daily communications and finances, businesses for servicing and manufacturing, and legal professionals for research and creation of opinions and briefs.

It would be useful to take a preliminary look at the elements of AI, beginning with its most elementary initial form, commonly called "Traditional" or "Basic."

What Traditional (Basic) AI Is

AI refers to the field of computer science and engineering dedicated to building machines and software that can perform tasks that normally require human intelligence. These include things like recognizing patterns, interpreting data, making decisions, solving problems, and responding to the environment.

Traditional AI – often called *narrow AI* or *restricted AI* – focuses on systems designed to perform *specific, defined tasks,* rather than exhibit human-level intelligence in all areas. These systems are trained to excel at particular functions based on data and algorithms but *do not possess consciousness, general reasoning, or broad understanding* beyond their specific domain.

Core Capabilities of Traditional AI

Traditional AI systems generally do the following:

Pattern recognition – identifying regularities or trends in data (like recognizing faces, speech patterns, or customer behaviors).

Classification and prediction – sorting inputs into categories (e.g., spam vs. non-spam email) or predicting outcomes based on past data.

Decision support – making recommendations or decisions within a specific framework (such as medical diagnosis aids or financial risk scoring).

Planning and optimization – finding effective ways to achieve a goal under defined constraints (e.g., scheduling, route planning).

---

[1] The publication is available on the Westlaw Practical Guide. https://content.next.westlaw.com/practical-law/document/Ia9f116f82a1611ee8921fbef1a541940/Developments-in-US-Artificial-Intelligence-Law-and-Regulation-2023-Tracker?viewType=FullText&navigationPath=Search%2Fv1%2Fresults%2Fnavigation%2Fi0a89b91f0000019b709ea60bb58ce821%3Fppcid%3Dc4e7656abce14fbba5d9e902c14127aa%26Nav%3DKNOWHOW%26fragmentIdentifier%3DIa9f116f82a1611ee8921fbef1a541940%26parentRank%3D0%26startIndex%3D1%26contextData%3D%2528sc.Search%2529%26transitionType%3DSearchItem&listSource=Search&listPageSource=61860e009fa8c0f084ba7401296c8fe9&list=KNOWHOW&rank=2&sessionScopeId=bc8ec28c1faebd1066911b918a3478464313242058af12e6ecc96deb3937b763&ppcid=c4e7656abce14fbba5d9e902c14127aa&originationContext=Search%20Result&transitionType=SearchItem&contextData=(sc.Search)&navId=77BBE45F80FBC975813446E87F38EDF5

See abstract Tables in the attached Appendixes A and B.

All these tasks rely on underlying techniques such as *machine learning* (in which models learn from labeled or unlabeled data) and *statistical algorithms* that derive patterns from data.

How Traditional AI Works (Mechanisms and Methods)

Traditional AI systems usually work through one or more of these key approaches:

Rule-based Systems (Symbolic AI) – In early AI research, developers wrote explicit rules and logic that the system followed.

Machine Learning (ML) – Machine learning is a method in which *systems learn patterns from data,* rather than rely on pre-programmed rules. Models are trained on examples — such as labeled images or historical records — to make predictions or classifications when presented with new inputs.

Characteristics of Traditional AI

Characteristics of traditional AI include the following:

Task-specific – Traditional AI performs *one predefined task* (e.g., driving a car, translating language, detecting fraud). It does not generalize beyond that task.

No True Understanding – It does not "understand" content in the human cognitive sense; it uses statistical patterns or rules to produce outputs.

Trained on Historical Data – Performance depends on quality and quantity of data the system learns from, and it cannot invent new reasoning methods by itself.

Predictive Not Creative – Its strength lies in *predicting and classifying*, rather than creating entirely new kinds of outputs and creative generation is not its goal.

However, "creative generation" has become a goal that has fully developed and has become possibly the most important, indeed the most complicated, function of AI.

Enter "Generative AI"

AI is a two-headed animal: the one we have just seen and called "traditional" is a basic producer of data AI, and another is called "generative" AI.

What is then generative AI? Generative AI refers to a class of artificial intelligence systems that generate new content, such as text, images, audio, video, or computer code, by learning statistical patterns and relationships from large datasets during a training process.

Unlike traditional AI systems that are limited to classification, prediction, or rule-based decision-making, generative AI models produce novel outputs in response to user inputs by probabilistically modeling such content under typical patterns.

A very simple, clear but comprehensive description and comparison of the two is in an article from the University of Illinois Urbana – Champaign,[2] reading sparsely:

[2] *Traditional AI vs. Generative AI: What's the difference,* by Office of Communications, College of Education, University of Illinois, 11 November 2024, https://education.illinois.edu/about/news-events/news/article/2024/11/11/what-is-generative-ai-vs-ai?utm_source=chatgpt.com

Generative AI—a type of AI that can create new content and ideas based on prompts, using machine learning models to learn patterns from large amounts of data. Generative AI is a type of AI that uses deep learning techniques to create new content, such as images, music, animation, 3D models, and text. Generative AI can take raw data—say, all of Wikipedia or the collected works of Rembrandt—and "learn" to generate statistically probable outputs when prompted.

Generative AI models are trained on large datasets that contain examples of the content they will generate. They learn to recognize patterns and features within this data and develops an understanding of the underlying structure. Once trained, a model can generate new, original content that mirrors the characteristics of the data it has seen before.

Generative AI uses advanced neural network architectures.

The generator creates new content, while the discriminator evaluates its authenticity. The two networks compete, improving each other over time. VAEs encode input data into a compressed latent space and then decode it to generate new, similar data.

What can Generative AI Create?

Generative AI can produce many types of content, including the following:

- Text (e.g., emails, contracts, reports, translations)
- Images (e.g., illustrations, designs, realistic photos)
- Audio (e.g., music, speech, voice synthesis)
- Video (e.g., animations, short clips)
- Computer code (e.g., software scripts, debugging assistance).

How Does Generative AI Work (at a High Level)?

Training Phase – The system is trained on large amounts of data (text, images, audio, etc.). It learns statistical patterns, structures, and relationships in that data.

Generation Phase – When a user provides a prompt or instruction, the AI predicts and generates new content based on what it has learned. The output is newly generated, not copied verbatim from training data.

Common Types of Generative AI Models

There are three basic types of generative AI: Large Language Models (LLMs) generate and understand human language (e.g., chatbots, document drafting); Image Generation Models create images from text descriptions; and Multimodal Models work across text, images, audio, and video simultaneously. So far, generative AI looks very good and productive, but it shares all criticisms of Traditional AI seen above, and more.

Like traditional AI, generative AI has its challenges and limitations: It may produce misleading or incorrect information, create "deep fakes," create realistic but fake content, posing security risks and raising privacy concerns, and generative AI models can inherit biases from training data, leading to biased or unfair outputs.

But, especially when found in the legal context, generative AI raises more and deeper criticisms. Let us move to review of AI in the legal world.

Enter the Legal World

The use of AI has increased in judicial and legal contexts, including legal research, drafting of pleadings and orders, case management, risk assessment tools, e-discovery, and client-facing legal services.

The Many Worlds of Artificial Intelligence

The "Artificials" stand in special positions depending on their location, their users, and the type of uses made of them, and the stage is now set to pass the lens over the AI issues in the world of the written law, of the legal profession. and of the judicial process.

(A) The Written Law

While the Federal Government has not yet enacted a comprehensive AI law, approximately 35 to 40+ states have enacted AI-related laws or measures, though these vary widely in scope and focus from deepfake prohibitions and election AI disclosures to AI use by government agencies or consumer protections.[3]

Some of the prominent legislations are found in Colorado, where its AI Act is one of the first comprehensive state AI laws in the United States (U.S.), followed by California, a leader with a large number of multiple AI laws, then Texas, Tennessee, and Illinois.

We can find a full overview of all the U.S. states at a page containing a blog by Orrick, titled "US AI Law Tracker,"[4] that shows a map of the states, and the legislative contents of each can be uploaded by clicking on the state's shape in the map.

An even more rapid overview is another tracker by the same Orrick, from which you can download a massive PDF that has a full list of all the legislative provisions that are effective in the USA.[5]

We now have a special mention of Florida, which has few AI-related laws in effect and some pending proposals.

---

[3] See Sezarr News, *US AI regulation 2025: How 38 states created a complex compliance maze for businesses,* 21 November 2025, https://sezarroverseas.com/us-ai-regulation-2025-state-laws-compliance/?utm_source=chatgpt.com

[4] Orrick, *AI Law Center,* https://ai-law-center.orrick.com/

[5] Orrick, *U.S. AI Law Tracker – All states,* https://ai-law-center.orrick.com/us-ai-law-tracker-see-all-states/

Florida Laws in Effect

Florida has a law on political AI disclosure law. Florida law now requires political ads or communications that include generative AI content to carry a clear disclosure if the content appears to depict real people doing things that did *not* occur and was created to mislead or harm. This is part of Florida Statutes *Section 106.145* on the use of generative artificial intelligence.[6]

Then there is a recent law on "Deepfake/AI-generated content protections." This law is known as *Brooke's Law* (HB 1161) that requires internet platforms to provide a process for victims to report and remove deepfake material – including AI-generated explicit imagery – within a specified timeframe. This law took effect on 31 December 2025.[7]

Then there is a bill (HB 527) moving through the Legislature that would limit how insurers can use AI: Insurers could use AI for recommendations but *human professionals* must make the final claim denial or reduction decisions, with transparency and regulatory review requirement. The House panel has approved the "Insurance AI oversight."

Florida's Laws Proposed or Pending in the 2026 Session

Florida has several key AI-related legislative proposals being actively considered: "Artificial Intelligence Bill of Rights" (SB 482).[8] Filed for the 2026 session, this bill would create a statutory AI Bill of Rights for Floridians. It includes rights such as: knowing when you are interacting with AI, parental controls for minors using AI, safeguards against unauthorized use of personal identifying information, and restrictions on sale or share of user data. It also adds contractual and enforcement provisions for chatbot platforms (e.g., parental consent for minor accounts).

(B) The Case Law

We now leave the area of legislation, where the books contain directions for the observation and implementation of AI, and step into the area of the judiciary, where the courts apply the AI legislative commands from the books day by day.

AI has become an increasingly visible component of modern judicial systems. Courts now rely on algorithmic and data-driven tools to assist with administrative functions, legal research, case management, and, in some jurisdictions, aspects of adjudication itself. AI is growing integration into judicial workflows raising important questions about institutional efficiency, legal reasoning, fairness, and the legitimacy of judicial outcomes.

---

[6] Florida Statutes, 106.145, Use of artificial intelligence, https://www.flsenate.gov/Laws/Statutes/2025/0106.145?utm_source=chatgpt.com

[7] FL H1161, *Removal of altered sexual depictions posted without consent*, 2025 Regular Session, https://www.flsenate.gov/Session/Bill/2025/1161

[8] Florida Senate, SB 482: Artificial Intelligence Bill of Rights, https://www.flsenate.gov/Session/Bill/2026/482/ByVersion?utm_source=chatgpt.com

The Principal Uses of AI in Courts are in three broad domains:

1. Administrative and Case-Management Functions – Courts widely use AI-powered systems to manage dockets, allocate cases, predict caseloads, and optimize scheduling.
2. Legal Research and Drafting Assistance – Judges and judicial staff increasingly use AI-based research platforms to retrieve relevant case law, summarize precedents, and draft memoranda or preliminary opinions.
3. Decision-Support and Risk Assessment Tools – In certain jurisdictions – especially in criminal justice – AI systems are used to assess risk, such as predicting recidivism, flight risk, or sentencing ranges. These tools rely on statistical correlations derived from large datasets and are intended to inform, not determine, judicial discretion. Their use is most controversial because of their proximity to the decisional function.

In sum, courts adopt AI technologies primarily to advance three institutional objectives – efficiency and speed, consistency and standardization, and information enhancement – but its effects are mixed and complex. There are *positive effects*: AI can enhance institutional capacity, reduce delays, and improve access to justice; but there are also *risks and distortions*: introducing new risks by producing inaccurate or fabricated legal authorities ("hallucinations"); overreliance on AI outputs can subtly shift decision-making from reasoned judgment to deference to algorithmic recommendations, a phenomenon sometimes described as "automation bias."

Court's Misuse of Wrong AI Supplied by the Parties

This prompts a question: What if it is the court to make its own decision using, or based on wrong and faulty use of Artificial Intelligence? The misuse could be an inaccurate adoption of material the parties submit without court's control, or use of defective AI material that the court itself has dug out or generated. In other words, has any appellate court ever overruled or vacated a decision because the judge or court itself used generative AI to support its own reasoning (not because lawyers misused AI)?

There are documented cases in which an appellate or higher court has reversed or vacated a lower court decision because the judgment below relied on AI errors, particularly fabricated, or incorrect legal citations that appear to have originated from AI tools.

For example, in mid-2025, the Georgia Court of Appeals overturned a trial court's order in a divorce case after concluding that the lower court's decision relied on nonexistent case law that the attorney likely generated using an AI model. The appellate court stated it was "troubled by the citation of bogus cases" and directed the lower court to revisit the underlying petition.

The trial court's opinion included citations to cases that did not exist, apparently produced by one attorney using generative AI, and the appellate court found that reliance on these fabricated authorities undermined the validity of the ruling.[9] The attorney responsible was sanctioned for filing a frivolous motion citing bogus authorities.

[9] See *Georgia court throws out earlier ruling that relied on fake cases made up by AI, 38 comment bubble on white, 'We are troubled by the citation of bogus cases in the trial court's order;* by Thomas Claburn, The Register – HPE, Tue 8 July 2025, https://www.theregister.com/2025/07/08/georgia_appeals_court_ai_caselaw/?utm_source=chatgpt.com

Another example is the U.S. District Court Withdrawal in the 2025 CorMedix case,[10] in which a federal judge withdrew a decision (though not explicitly citing AI use) after lawyers pointed out multiple erroneous citations and fabricated case information in an opinion – errors characteristic of AI hallucinations. The court indicated the ruling was entered "in error" and that a revised decision would follow.

These cases illustrate a growing judicial concern, that while courts rely heavily on precedent and accurate citations, the use of fabricated authorities compromise fairness and due process. Even if the opinion does not formally blame AI, the hallmark signs (non-existent case names, incorrect outcomes) are characteristic of AI hallucinations. Appellate reversal or *vacatur* is a possible consequence when such errors meaningfully affect the lower court's analysis.

One more specific question still remains: Are there cases of court decisions overruled for the reason that the court itself made a wrong generation and use of AI, with a finding that is wrong or improper?

No. There is no confirmed, precedential case in which a higher court has expressly overruled a lower court decision because the court itself relied on generative AI as part of its judicial reasoning. However, there are documented instances in which judges have used AI as a drafting assistant or for research, resulting in significant errors in court orders.

Documented Cases of AI Use by Judicial Staff

In 2025, two U.S. federal judges admitted that their staff used generative AI to draft court orders, which led to errors and subsequent retraction of the rulings. See Jackson Federation of Teachers, et al. v. Lynn Fitch, Case No. 3:25-cv-00417 (S.D. Miss.).[11] A law clerk used a *generative AI tool called Perplexity* to assist with drafting, but the draft contained a mistaken docket entry *before final review,* reading: "In the case of the Court's Order issued July 20, 2025, a law clerk utilized a generative artificial intelligence ('GenAI') tool known as Perplexity strictly as a foundational drafting assistant to synthesize publicly available information on the docket." Wingate acknowledged that this draft should never have been filed because it did not go through the full review process.

Judge Henry T. Wingate (U.S. District of Mississippi) acknowledged that his law clerk used an AI program called Perplexity as a "foundational drafting assistant" for a temporary restraining order. The resulting order contained significant inaccuracies, including misnaming plaintiffs and defendants, misquoting state law, and referencing a case that did not exist. The order went on the docket without a full review process.

Then see, In re CorMedix Inc. Securities Litigation, Case No. 2:21-cv-14020 (D.N.J.).[12] In a separate reply to Chairman Grassley, Judge Neals addressed a *June 30, 2025, Opinion and Order* in the above case, later withdrawn due to substantive errors stemming from research done using generative AI. The judge explained that the errors included quoting the defendants

[10] Jess Weatherbed, Errors found in US judge's withdrawn decision stink of AI, at The Verge, "*The opinion cited made-up quotes and misstated case outcomes, errors that AI tools are known to hallucinate*."

[11] See United States Senate, Judiciary Committee, *Charles Grassley electronic transmission to Hon. Henry T. Wingate,* 06 October 2025, https://www.grassley.senate.gov/imo/media/doc/grassley_to_the_honorable_henry_twingateaioversight.pdf?utm_source=chatgpt.com

[12] See *Charles Grassley electronic transmission to Hon. Julien Xavier Neals*, https://www.grassley.senate.gov/imo/media/doc/grassley_to_the_honorable_julien_xavier_neals_-_ai_oversight.pdf?utm_source=chatgpt.com

inaccurately, relying on case quotations that did not exist, and misstating outcomes of cited cases. Public reporting attributed these errors as hallmarks of generative artificial intelligence “hallucinations.”

According to contemporaneous Reuters reporting, Neals acknowledged that a law school intern used ChatGPT *for research without authorization*, which contributed to the mistaken issuance of the draft opinion: “[A] law school intern used OpenAI’s ChatGPT for research without authorization or disclosure, resulting in an incorrectly docketed draft decision that was withdrawn when the errors were brought to his chambers’ attention.” Judge Neals revealed that the law school intern used ChatGPT to perform legal research, leading to a June 2025 order that included non-existent case quotations.

A widely cited Reuters news report[13] confirms both judges publicly acknowledged AI involvement in drafting error-ridden court orders: “Two U.S. federal judges … said the decisions in the unrelated cases did not go through their chambers’ typical review processes before they were issued … Neals said a law school intern used OpenAI’s ChatGPT for research without authorization … Wingate said his law clerk used Perplexity AI to draft a civil rights case decision.” This Reuters article confirms the tool names and that the orders were mistaken drafts, rather than finalized opinions. Both cases turn upon the fact that the judge used material from a law clerk that used an AI application named “Perplexity,” which a law school intern generated using a ChatGPT.

(C) The Legal Profession

This is the area that requires the highest level of attention. The legislation writes the rules, and the judiciary enforces them, but it is the lawyer who activates the procedure of having a right recognized and enforced.

Lawyers perform a set of core professional activities designed to advise clients, resolve disputes, structure transactions, and support the administration of justice. These activities – consisting in legal advice and counseling, legal research and analysis, drafting of legal documents, representation and advocacy, negotiation and dispute resolution, compliance and risk management, ethical oversight and professional responsibility – are carried out within a framework that substantive law, procedural rules, and professional and ethical obligations define.

Overview

A recent online piece by Thomson Reuters[14] supplies a deep overview of the overall use of AI in legal practice, and of how, over the past few years, legal professionals have become increasingly embracing AI as a transformative force, becoming more and more optimistic about the positive impact it can have on their practices.

The report shows that 77% of lawyers use generative AI for document review, 74% use it for legal research, 74% use it to summarize documents, and 59% use it to draft briefs or memos.

Clearly, AI is reshaping the legal profession and its impact on legal work and clients. Clients benefit from a quicker response time, a reduction in human error, and a sharper lens for

[13] See Two Federal judges say use AI led to errors in rulings, Reuters, 23 October 2025, https://www.reuters.com/sustainability/society-equity/two-federal-judges-say-use-ai-led-errors-us-court-rulings-2025-10-23/?utm_source=chatgpt.com

[14] See Marjorie Richter J.D., *How AI is transforming the legal profession*, Thomson Reuters, 18 August 2025, https://legal.thomsonreuters.com/blog/how-ai-is-transforming-the-legal-profession/

case analytics. Lawyers benefit from AI's ability to offer more personalized discussions and recommendations.

However, AI use does come with concerns about the ethical use and the reliability of generated information. AI always requires human supervision, especially when giving legal advice and representing clients in court.

Federal Regulation

Another page from Thomson Reuters[15] supplies the following update of Federal legal developments of AI regulation. The U.S. does not have a comprehensive federal law regulation of AI. On January 23, 2025, President Trump signed the executive order, Removing Barriers to American Leadership in Artificial Intelligence. This revoked former President Biden's October 2023 Executive Order 14110, which mandated safety testing and reporting, the development of key standards, and aimed to prevent discriminatory practices and protect civil rights.

Several U.S. federal agencies have instituted rules or regulatory guidance. Examples include the following: the Securities and Exchange Commission (SEC), which established the Cyber and Emerging Technologies Unit (CETU) to target AI-related fraud; the Federal Trade Commission (FTC), which instituted a rule banning fake reviews, including AI-generated reviews; and the Federal Communications Commission (FCC), which instituted regulations to prevent robocalls by AI-generated voices.

State Bar Regulation

Lawyers must adhere to the rules of professional conduct of state Bar associations, which often echo the Model Rules of Professional Conduct of the American Bar Association, as it is found in an article on Justia, that gives the fullest coverage of this topic.[16] In 28 pages, this article gives not only the most extensive compound of all the uses that lawyers of AI can make, and how, but also gives a list of how the Bars of all 50 states of the USA, state by state, regulate the issue. The reader will be able to see the regulations of each state just by clicking on the state's name (see Appendix B).

The Florida Case

Among all the Bars, the Florida Bar is a leader in addressing AI's potential risks and studying protections. The August 15, 2025, issue of the *Florida Bar News*, reported on the actions and proposals by the Ethics Committee and the Florida Supreme Court, calling them "guardrails" for risk protection, as we read in the following excerpt:

> It seems Florida's lawyers are determined to stay ahead of the curve when it comes to the use of artificial intelligence tools in the practice of law. (n.p.)

---

[15] Amanda OKeefe, Director, Global Data Privacy & Cybersecurity, Thomson Reuters, *Navigating AI laws and regulations across practice areas,* July 28, 2025, https://legal.thomsonreuters.com/blog/navigating-ai-laws-and-regulations-across-practice-areas/

[16] AI and attorney ethics rules: 50-state survey, Justia, April 2025, https://www.justia.com/trials-litigation/ai-and-attorney-ethics-rules-50-state-survey/

On January 19, The Florida Bar's Board of Governors published new guidance on how Florida's lawyers can ethically deploy AI tools. The ethical guidance underscores the need for lawyers using AI – particularly generative AI tools such as ChatGPT – to make sure they continue to safeguard the confidentiality of client information, develop law firm policies for the oversight of generative artificial intelligence, ensure that AI-related fees are reasonable, and take care that they do not use AI in a way that results in misleading marketing communications.

The Board of Governors' action followed the release of a package of AI-related proposed ethics code revisions the group sent to the Florida Supreme Court earlier in January.[17] The excerpt mentions two main developments of Florida regulation of AI: the Florida Bar's Advisory Opinion 24-1 and the Florida's Supreme Court amendment of the same.

Advisory Opinion 24-1

Advisory Opinion 24-1 is a non-binding ethics opinion of *The Florida Bar* on January 19, 2024, providing guidance to lawyers on the ethical use of generative AI in legal practice. The Board Review Committee on Professional Ethics drafted it, and the Bar's Board of Governors approved it.[18]

Core Points of Advisory Opinion 24-1

Lawyers may ethically use generative AI in legal practice *if* they continue to uphold their ethical duties.

Key professional responsibilities implicated include the following: (a) confidentiality – lawyers must ensure client information remains protected when using AI tools and may need to obtain *informed consent* if third-party AI platforms could access confidential data; (b) competence and oversight – lawyers must understand the technology used, supervise AI outputs, and ensure they meet professional obligations; (c) billing – AI's efficiency should not lead to improper billing practices such as double-billing; and (d) advertising – lawyers using AI for client interactions or promotions must comply with advertising ethics and not make unverified superiority claims.[19]

Supreme Court Amendment

The Florida Supreme Court has not directly "revised" Advisory Opinion 24-1 because advisory opinions themselves are internal Bar guidance and not Court rules. However, the Court has adopted changes to the Rules Regulating The Florida Bar that incorporate AI-related ethical considerations that were initially proposed alongside the opinion (The Florida Bar).

[17] Esquire Deposition Solutions, Florida's lawyer leaders push ethical guardrails for AI use, 25 January 2024, https://www.esquiresolutions.com/floridas-lawyer-leaders-push-ethical-guardrails-for-ai-use/

[18] Florida Bar, Board of Governors adopts ethics guidelines for generative AI use, *Florida Bar News*, https://www.floridabar.org/the-florida-bar-news/board-of-governors-adopts-ethics-guidelines-for-generative-ai-use/?utm_source=chatgpt.com

[19] JD Supra, Florida's new advisory ethics opinion, https://www.jdsupra.com/legalnews/florida-s-new-advisory-ethics-opinion-6543014/?utm_source=chatgpt.com

In the August 29, 2024 decision In Re: Amendments to Rules Regulating The Florida Bar – Chapter 4, the Court amended Bar rules and comments to address generative AI use, including updates to rules about

- Rule 4-1.1 (Competence)
- Rule 4-1.6 (Confidentiality)
- Rules governing supervision and advertising

as part of its consent to add language reflecting AI-related ethical considerations (Supreme Court). These amendments became effective October 28, 2024, and specifically note technology and AI concerns in the comments to professional conduct rules.

This is not the end of Florida's developments. While committees are exploring additional certifications, e-filing warnings, and disclosures related to AI in litigation, in addition to the legislative and ethical developments, the government thought well to put in its own interference.

Governor DeSantis Bill of Rights

On 04 December 2025, the newsroom of the Florida Governor posted the announcement that, "Governor Ron DeSantis announced a proposal to protect consumers by establishing an Artificial Intelligence Bill of Rights for citizens" and to protect Floridians from footing the bill for Hyperscale AI Data Centers and to empower local governments to reject their development in their communities.[20] The proposal reads as follows:

> Today, I proposed new legislation on artificial intelligence and AI data centers to protect Floridians' privacy, security, and quality of life.
>
> [and]
>
> Our AI proposal will establish an Artificial Intelligence Bill of Rights to define and safeguard Floridians' rights—including data privacy, parental controls, consumer protections, and restrictions on AI use of an individual's name, image or likeness without consent.

The proposal has not received approval nor acceptance by the Legislature but is still under consideration, so we must stay tuned for any possible upcoming development. To report the full content of the long proposal would be outside the scope and size of this article, but suffice it to mention some concerns about what may happen to the practice of law, the impact on the legal profession, and the ethical use of AI by lawyers. Even *before* this bill, major legal bodies (including The Florida Bar) have said that lawyers can ethically use generative AI — provided they understand and control risks. The new Florida proposal could *reshape that ethical landscape* by imposing additional legal constraints.

[20] Governor Ron DeSantis announces proposal for citizen bill of rights for artificial intelligence, Press Release, 04 December 2025, https://www.flgov.com/eog/news/press/2025/governor-ron-desantis-announces-proposal-citizen-bill-rights-artificial?utm_source=chatgpt.com

Potential Professional Effects

Lawyers must disclose to clients and courts when they use AI in drafting documents or for research – going beyond current ethical guidance. They might face new civil liability exposure if they assist clients with AI interactions that violate the state's AI standards (e.g., misuse of personal data, mislabeled AI content). There could be a chilling effect on using certain AI tools, unless they comply fully with transparency and safeguarding rules.

Regulation of Legal Tech

Florida's proposal focuses more on consumer protections than on law practice per se, but its data privacy, disclosure, and prohibition mandates may extend into legal software markets: Software vendors selling AI legal work tools might have to comply with new data security and labeling rules. Law firms adopting off-the-shelf AI systems may face new compliance and auditing requirements.

Liability and Malpractice Exposure

If the court or legislature defines misuse of AI (e.g., generating false documents) as a deceptive trade practice or civil violation with penalties, lawyers might see heightened malpractice risk if AI output leads to client harm and additional compliance burdens – documenting how AI was vetted, cited, and disclosed in filings.

Bottom Line

If enacted as the proposal has mandated, Florida's AI bill of rights would directly and indirectly shape how AI is used in legal settings by:

1. Creating new disclosure and transparency requirements for AI output introduced in proceedings.
2. Potentially expanding civil liability and enforcement authority for AI-related harms that end up in court.
3. Adjusting ethical and professional standards for lawyers using AI tools.
4. Prompting courts to interpret and possibly expand rules around evidence and technology.

All of this would push the legal system toward greater regulation of AI use, with both procedural and professional ramifications, but key details will depend on how the bill evolves through the legislative process.

But What About Arbitration?

The judiciary is not the only main character in the world of dispute resolution. Arbitration has infiltrated as a tremendous competitor, in some areas like shipping, almost replacing the judiciary. Two centers dominate nationwide.

American Arbitration Association

Established in 1926 in Broadway, New York, where it has its headquarters, the American Arbitration Association® (AAA) has 30 offices and centers (regional AAA and combined with its sibling International Centre for Dispute Resolution®, ICDR) and maintains a network of domestic offices throughout the U.S., and through its ICDR, has additional international offices and hearing centers.

The AAA also administers the ICDR as its international division, operating as a global network, rather than a large set of standalone physical offices. It has dedicated offices and hearing facilities in major cities like New York and Singapore, and it leverages a global network of cooperative partner institutions in many countries to provide international arbitration services. In practical terms, the ICDR's core physical office count is small (a few major offices), supported by its broad global cooperation agreements.

On September 17, 2025, the AAA-ICDR announced it would release an AI arbitrator to deliver fast, cost-effective, and trusted dispute resolution. The so-called "AI arbitrator" was first available in November 2025 for documents-only construction cases, a high-volume area in which efficiency and speed are essential.[21] A blog by Aceris Law, LLC[22] supplies this description:

> The "AI Construction Arbitrator" is a machine-learning system designed to assist in resolving low-value, document-only construction disputes. Developed by the AAA-ICDR in partnership with QuantumBlack, AI by McKinsey, it reviews pleadings, evidence, and contract documents to prepare a draft award that a human arbitrator then reviews, finalizes and, most importantly, signs. The system was trained on more than 1,500 real construction awards from the AAA's archives and is supposed to replicate the actual decision-making process by real human arbitrators. According to AAA-ICDR, it uses a structured legal prompt library and advanced conversational AI models to deliver legally sound and explainable recommendations. *Human arbitrators remain in the loop, reviewing and validating each draft before it becomes an official award*" (emphasis added).

Judicial Arbitration and Mediation Services

Founded in 1979 and running headquarters in the *New York Times* building, the Judicial Arbitration and Mediation Services (JAMS) operates a network of Resolution Centers across major U.S. regions, providing hearing facilities and Alternative Dispute Resolution (ADR) services.[23] The organization also has dedicated international arbitration center facilities, and 29 resolution centers across the U.S. and select international locations (with virtual support available).[24]

[21] See Alternative Dispute Resolution, AAA-ICDR to launch AI-native arbitrator transforming dispute resolution, 17 September 2025, https://www.adr.org/press-releases/aaa-icdr-to-launch-ai-native-arbitrator-transforming-dispute-resolution/

[22] AI construction arbitrator: Revolutionising the future of international arbitration? 10 November 2025, ACERIS Law LLC, https://www.acerislaw.com/ai-construction-arbitrator-revolutionising-the-future-of-international-arbitration/

[23] See Judicial Arbitration and Mediation Services Alternative Dispute Resolution, https://www.jamsadr.com/about

[24] This figure reflects the number of physical JAMS Resolution Centers as the organization reports.

At the same time as the AAA introduction of AI arbitration rules, JAMS has drafted arbitration rules specifically designed for AI-related disputes. The so-called JAMS Artificial Intelligence Dispute Clause and Rules have become effective 14 June 2024, and apply to binding arbitration if the parties agree to use them, either in a contract or when an AI-related dispute arises.

In its blog presentation of the rules,[25] JAMS advises that, "however, the rules don't address the use of AI in the process of dispute resolution itself (e.g., neutral and advocate use of generative AI systems)." Instead, JAMS informs that its AI procedures will follow the ethical recommendations that the Silicon Valley Arbitration and Mediation Center (SVAMC) provides in its published Guidelines on the Use of Artificial Intelligence in Arbitration on 30 April 2024, which discusses AI use by all participants in an arbitration.[26]

The "Artificial Arbitrator"

It may not be a coincidence that the Florida Bar Opinion and the AI Arbitration Rules came into existence almost contemporaneously in 2024 and 2025, and contain virtually the same precautionary protection ethical provisions. The Florida Opinion has the backup fine tuning from none else than the Florida Supreme Court, and the Arbitration rules are closely fine-tuned with the Silicon Valley that has become a Nationwide model.

With this, we are ready to draw some conclusions.

Conclusion

Clearly then, AI has come a long way into the legal world, and so into the endeavors of regulation. However, the most critical point is what use of AI is made and by whom.

It is relatively easy for legislators to devise orders of conduct, and also somehow easy for the courts to assess compliance, but what about the actual "hands-on" activities of those who are the one that generate and handle litigation: the legal professionals?

Their professional use is to make efficient research, finding the best connection of facts with the rules of law that could support the interest of the client, a double job, as the findings always are different for plaintiff and defendant. To achieve these results, lawyers are making more and more use of AI, and what is most important is for the lawyers to know how to use it: how to frame the request to the AI and how to control the truthfulness of the answer AI supplies.

These jobs require the lawyers to have top knowledge of the AI techniques, a thing that not all professionals possess, either for lack of practice, or of instruction, or both.

But instruction is possible: There are both formal academic programs and online instruction options designed to teach how to use artificial intelligence in legal contexts. Law school degree programs with AI focus: Some law schools now incorporate AI-related coursework into their degree programs, or even offer specific *focus areas* or concentrations, and online courses and Continuing Education are available.[27]

---

[25] Dispute Resolution in the AI Age, The New JAMS AI Rules, 28 February 2025, https://www.jamsadr.com/insight/2025/dispute-resolution-in-the-ai-age-the-new-jams-ai-rules

[26] SVAMC Guidelines on the Use of Artificial Intelligence in Arbitration, published by Silicon Valley Arbitration and Mediation Center, 30 April 2024, https://svamc.org/wp-content/uploads/SVAMC-AI-Guidelines-First-Edition.pdf

[27] See Appendix C, below.

There are 60+ law schools with AI-related instruction in the U.S. law sites[28] – dozens of CLE accredited legal AI training programs[29] available online and about 6 or 10 online public AI training programs for legal professionals, notable courses and certification.[30] But it is doubtful that all the lawyers have gone through this education, given the striking number of law cases that found misuse of AI by lawyers.[31]

From all this comes the final idea that that any candidate to Bar admission should be proven possessing all the available AI techniques, a proof that can be best, if not only, obtained by the passing of a Bar exam. However, there is no U.S. State Bar Exam with a dedicated "AI Section." As of now, neither the Uniform Bar Exam (UBE) nor most state bar exams include a formal section specifically about artificial intelligence law or AI topics as a required tested subject, and Bar associations are working on AI guidance but not on AI sections in the Bar Exam.

Final conclusion: We dare sending to all the U.S. Bar Associations a proposition, to insert in their Bar Exam one section of wide AI questions, after having addressed the candidates to preparation courses prepared by the Bar with the cooperation of schools or programs and so offered to candidates.

Then the Court Clerk will admit the lawyers "of record" in the ongoing proceedings by summoning their answer to this request:

"Counsel rise, raise your hand, and swear: I passed the AI Section of my Bar Exam."

[28] See Lawnext, https://www.lawnext.com/2024/08/remember-that-aba-survey-of-law-schools-with-ai-classes-this-may-be-a-more-accurate-list.html?utm_source=chatgpt.com

[29] See Lawline, Artificial intelligence, https://www.lawline.com/cle/topics/artificial-intelligence?topic=Artificial%20Intelligence

[30] See Coursera, https://www.coursera.org/learn/ai-for-legal-practice?utm_source=chatgpt.com

[31] A random search through Westlaw and Lexis returns this number in a couple of thousands.

Appendix A

States with Dedicated Overview Pages

1. **Alabama** – https://ai-law-center.orrick.com/alabama/ (AI laws including election deepfake and deceptive media) AI Law Center
2. **Arkansas** – https://ai-law-center.orrick.com/arkansas/ AI Law Center
3. **California** – https://ai-law-center.orrick.com/california/ AI Law Center
4. **Colorado** – https://ai-law-center.orrick.com/colorado/ AI Law Center
5. **Connecticut** – https://ai-law-center.orrick.com/connecticut/ AI Law Center
6. **Delaware** – https://ai-law-center.orrick.com/delaware/ AI Law Center
7. **Florida** – https://ai-law-center.orrick.com/florida/ AI Law Center
8. **Georgia** – https://ai-law-center.orrick.com/georgia/ AI Law Center
9. **Illinois** – https://ai-law-center.orrick.com/illinois/ AI Law Center
10. **Indiana** – https://ai-law-center.orrick.com/indiana/ AI Law Center
11. **Kansas** – https://ai-law-center.orrick.com/kansas/ AI Law Center
12. **Kentucky** – https://ai-law-center.orrick.com/kentucky/ AI Law Center
13. **Louisiana** – https://ai-law-center.orrick.com/louisiana/ AI Law Center
14. **Maine** – https://ai-law-center.orrick.com/maine/ AI Law Center
15. **Massachusetts** – https://ai-law-center.orrick.com/massachusetts/ AI Law Center
16. **Minnesota** – https://ai-law-center.orrick.com/minnesota/ AI Law Center
17. **Mississippi** – https://ai-law-center.orrick.com/mississippi/ AI Law Center
18. **Missouri** – https://ai-law-center.orrick.com/missouri/ AI Law Center
19. **Montana** – https://ai-law-center.orrick.com/montana/ AI Law Center
20. **Nebraska** – https://ai-law-center.orrick.com/nebraska/ AI Law Center
21. **Nevada** – https://ai-law-center.orrick.com/nevada/ AI Law Center
22. **New Hampshire** – https://ai-law-center.orrick.com/new-hampshire/ AI Law Center
23. **New Jersey** – https://ai-law-center.orrick.com/new-jersey/ AI Law Center
24. **New York** – https://ai-law-center.orrick.com/new-york/ AI Law Center
25. **North Carolina** – https://ai-law-center.orrick.com/north-carolina/ AI Law Center
26. **Ohio** – https://ai-law-center.orrick.com/ohio/ AI Law Center
27. **Oregon** – https://ai-law-center.orrick.com/oregon/ AI Law Center
28. **Pennsylvania** – https://ai-law-center.orrick.com/pennsylvania/ AI Law Center
29. **Rhode Island** – https://ai-law-center.orrick.com/rhode-island/ AI Law Center
30. **South Carolina** – https://ai-law-center.orrick.com/south-carolina/ AI Law Center
31. **Tennessee** – https://ai-law-center.orrick.com/tennessee/ AI Law Center
32. **Texas** – https://ai-law-center.orrick.com/texas/ AI Law Center
33. **Utah** – https://ai-law-center.orrick.com/utah/ AI Law Center
34. **Virginia** – https://ai-law-center.orrick.com/virginia/ AI Law Center
35. **West Virginia** – https://ai-law-center.orrick.com/west-virginia/ AI Law Center
36. **Wisconsin** – https://ai-law-center.orrick.com/wisconsin/ AI Law Center

States without Individual Pages Yet

37. **Alaska** – https://ai-law-center.orrick.com/us-ai-law-tracker-see-all-states/ (click Alaska on the map) AI Law Center
38. **Iowa** – https://ai-law-center.orrick.com/us-ai-law-tracker-see-all-states/ (click Iowa on the map)

Appendix B

AI and Attorney Ethics Rules: 50-State Survey

- Alabama
- Alaska
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- Delaware
- Florida
- Georgia
- Hawaii
- Idaho
- Illinois
- Indiana
- Iowa
- Kansas
- Kentucky
- Louisiana
- Maine
- Maryland
- Massachusetts
- Michigan
- Minnesota
- Mississippi
- Missouri
- Montana
- Nebraska
- Nevada
- New Hampshire
- New Jersey
- New Mexico
- New York
- North Carolina
- North Dakota
- Ohio
- Oklahoma
- Oregon
- Pennsylvania
- Rhode Island
- South Carolina
- South Dakota
- Tennessee
- Texas
- Utah
- Vermont
- Virginia
- Washington
- Washington, D.C.
- West Virginia
- Wisconsin
- Wyoming

Appendix C

Academic Programs

Here are academic programs that combine deep, legal-theoretical study with hands-on practical training in how AI is used *in and for* legal practice. These span full degree programs, interdisciplinary certificates, and executive-level practical courses. Here is a curated list that balances both *academic depth* and *real-world skills*:

University Degree & Certificate Programs (Academic + Practical)

1. University of Southern California (USC) Gould School of Law – *Law and Artificial Intelligence Certificate*

A structured academic certificate offered through a top U.S. law school. It explores AI's legal impacts, ethical framework, and applications while positioning students *alongside JD & LLM candidates* in regular law classes. USC Gould School of Law

- Focus: AI & law foundations, risk, ethical issues, regulation
- Type: Certificate from a law school (no JD required to apply)
- Depth: Academic study with legal topics and evolving concepts

----

2. University of California (UC) Berkeley Law – *LL.M. Certificate in AI Law & Regulation*

One of the first formal specialized law certificates tied to an LL.M. degree. It teaches regulation, ethics, licensing, risk, and policy — with flexible formats including remote or summer options. UC Berkeley Law

- Focus: Advanced legal study + practical policy/regulation analysis
- Type: Executive LL.M. track or certificate specialization
- Depth: Graduate-level legal academic rigor

Berkeley also runs Applied AI Bootcamps for Lawyers — short, intensely practical workshops teaching real skills in AI tool use and supervision. UC Berkeley Law

----

3. University of California Los Angeles (UCLA) Law – *MLS with Law & Technology Specialization*

This Master of Legal Studies program includes AI, privacy, tech law, cybersecurity, and innovation, offering a solid academic foundation relevant for legal professionals working at the intersection of technology and law. UCLA School of Law

- Focus: Law + technology integration
- Type: Graduate professional degree
- Depth: Broad academic curriculum

---

4. University of San Francisco – *AI & Emerging Technology Law Certificate*

Law students participate in coursework and a practicum requirement (like externships or clinics), which provides *applied experience* in technology law, including AI topics. University of San Francisco

- Focus: Legal frameworks + practicum (hands-on practice)
- Type: Law school certificate
- Depth: Blends theory with real legal work

---

5. Law School Elective Courses (Examples)

Many law schools now offer courses specifically mixing theory and practice, such as:

- Columbia Law — *Applied AI in Legal Practice*: Students use real AI tools in drafting exercises and learn practical applications. Columbia Law School
- Albany Law — *Legal Tech & AI in Legal Practice*: A JD course with hands-on study of current AI tools + ethical use. Albany Law School
- Stanford d.school — *AI for Legal Help*: Interdisciplinary course where students work on real AI solutions for legal challenges. Stanford d.school

These electives are often embedded in JD or MLS programs, giving academic depth *with real tool exposure*.

Professional / Practical AI in Law Courses (Complementary Skills)

These are not full degree programs but add real-world usable skills you will use in a legal job:

Duke Continuing Studies – *Embracing AI for Legal Professionals*

A 40-hour professional course focused on legal AI tools for research, document review, contract analysis, and ethical practice. Duke Learning More

---

Berkeley *Applied AI Bootcamp for Lawyers*

Short, hands-on workshops to understand and use AI in legal workflows — ideal for lawyers and legal professionals seeking skills that translate immediately into practice. UC Berkeley Law

---

USC Gould *AI in Law: Strategy, Practice & Innovation*

An online executive course emphasizing *practical AI implementation* in practice, including developing strategies, evaluating tools, and managing AI-related risks.

About the Author

Attilio M. Costabel is Adjunct Professor at St. Thomas University School of Law, Miami, since 1995, teaching Admiralty Law, Marine Insurance, Boating and Cruising Law, Transnational Litigation and International Business Transactions. He has practiced Admiralty Law with offices in Italy, London and Miami since his admission to the Italian Bar in 1965 and to the Florida Bar in 1998. He is a Proctor member of the Maritime Law Association of the United States, active in the Admiralty Committee of the Florida Bar, Vice Chair-Elect of the Admiralty and Maritime Law Committee of the ABA TIPS, Vice Chair for Programs of ABA International Law Committee and member of the Cuban Law Subcommittee of the International Law Committee of the Florida Bar. ORCID 0009-0008-7279-4678.

Discussion Questions

1. Do you believe that the ever-improving technology of "machine learning" may one day teach a machine to make legal decisions accordingly?

2. Would you support a legislative attempt to have court decisions scrutinized for origins of research citations used by the Court in support of the judgment?

3. Would you agree that the formal preparation for the appointment of a Lawyer or of a Judge should require deep and specific scholarly instruction of all kinds of Artificial Intelligence?

To Cite this Article

Costabel, A. M. (2025, Fall), All rise! The artificial intelligence legal assistant is sitting online. *Journal of Multidisciplinary Research, 17*(2), 33–53.

“Mario Costa Rica”
Costa Rica
2023

Photography by Nassim Harosh.

Journal of Multidisciplinary Research, Vol. 17, No. 2, Fall 2025, 55–84.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Artificial Intelligence (AI) and Process-Improvement (PI) Emerge to Mitigate Risk: A Literature Review on Limited English Proficiency (LEP) Worker Safety

Kevin J. Kapuku
Le Centre de Recherche et de Formation en Éthique Appliquée

John D. Rudnick, Jr.
Thomas More University

Abstract

The authors of this systematic literature review provide context and share strategies to mitigate risk by reducing the potential for workplace accidents among Limited English Proficiency (LEP) workers. Those whose first language is not English typically fill jobs that are "dirty, dangerous, and demeaning." Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines frame the examination of 2019–2025 studies among four databases. The results indicate that a lack of training and understanding of language increases workplace incident rates by 25–40%, compared with the rate of native language training. Unique to this study is the consideration and application of Lean Six Sigma process improvement methodologies including root cause analysis (RCA), 5 Whys, and the Define, Measure, Analyze, Improve and Control (DMAIC) frameworks. Artificial Intelligence (AI) emerges as a transformative tool that has the potential to tailor learning preferences using (AI-driven) tools to convert training requirements into visual, auditory, read-write, and kinesthetic preferences offering scalable solutions to ameliorate accident rates. Multi-modal learning methods and visual-pictorial illustrations surface as the likely training styles embraced along with an opportunity to use aggregated data and predictive analytics to focus training. Recommendations for future study include longitudinal studies that assess injury prevention training as well as the synergy that results from applying process improvement and digital technologies for accident reduction.

Keywords

occupational safety, multilingual communication, cultural competency, process improvement, artificial intelligence

Introduction

Background and Context of Manufacturing Safety Challenges

Safety challenges persist across all manufacturing operations worldwide. Deeply rooted failures in communication, often disproportionately more adverse to the foreign-born workforce demographic groups, significantly hinder maintaining occupational safety in the context of the manufacturing sector within the United States (U.S.) industry landscape. These observable gaps in systemic communication failures associated with Limited English Proficiency (LEP) workers result in disproportionately higher rates of fatalities. More than 2.3 million people worldwide die annually from occupational mishaps or occupational illness, primarily affecting industrial manufacturing sectors (ILO, 2024). Taufek and others (2016) underline that establishing diverse workplace safety standards has priority in manufacturing because inadequate employee understanding and training remains the primary accident factor. Safety practices teach employees how to respond to emergencies while minimizing work-related accidents.

According to Lindhout and others (2019), manufacturing faces a pervasive language barrier problem because of low literacy rates, insufficient training materials, and insufficient workplace language capabilities. Various individual conditions, which include dyslexia, further exacerbate communications challenges, impeding the abilities for accurate interpretation of communicated safety information by workers. Empirical evidence from 2000 to 2004 demonstrates that foreign-born and LEP workers experience disproportionately higher rates of workplace related incidents, compared to native counterparts (Lau et al., 2024). Research by Lindhout and others (2019) demonstrated that foreign workers in German construction sites experienced four times more falling object accidents, compared to data from U.S. construction sites, which showed similar risks for migrant laborers. Specialized safety training, translated safety alerts, and employment by multilingual supervisors can resolve these safety challenges that bilingual workers encounter. Research studies have demonstrated that hybrid programs combining visual and audio learning increase multilingual workforce compliance by 35%, beyond traditional training methods (Rađenović, 2023). Some interventions make progress, but others fail to reach their targets. User testing remains essential alongside hybrid delivery approaches that emerged from these experiences (Young, 2024). The European Agency for Safety and Health at Work (EU-OSHA) found through its report that generic intervention approaches fall short because they dismiss multilingual workforces' language specifics and cultural framework (Rađenović, 2023). These consistently observable trends emphasize the increasing need and imperative for manufacturing entities to prioritize development and implementation of agile strategies and practices for effectively addressing safety risks attributed to language challenges as deeply rooted structural problems, rather than an individual issue.

Language Demographics in Manufacturing

The U.S. Bureau of Labor Statistics (BLS) (2023) reports that Caucasian workers make up 78.4% of manufacturing sector workers in the U.S., closely followed by Hispanic or Latino workers at 18.1%, Black or African Americans at 10.8%, and Asian workers at 7.6%. Asian workers make up 18.9% of foreign-born workers in U.S. manufacturing (United States Bureau of Labor Statistics, 2023). Therefore, a significant level of diversity in the manufacturing sector contributes to challenges associated with multilingual safety communication. The global picture shows these same patterns emerging. Berufsbildungsgesetz-BBIG (2020) highlights that the German labor law stipulates foreign language education for new hires since more than one-fifth of industrial workers belong to immigrant populations. The Singaporean Ministry of Manpower demands manufacturers deliver required safety instructions in Mandarin, Bengali, and Tamil. Research by Fiset and others (2023) demonstrated that mandatory safety briefings improved plant operation language comprehension by 43% across two years of continuous observations.

Problem Statement with Statistics

Migrant labor functions as a vital component of North American workforce operations particularly in the U.S., where foreign-born workers make up 18.1% of the total workforce at 29.2 million workers in 2023. Migrant workers who seek employment in North America frequently experience major health issues at their workplace. Many migrant workers take employment in “3-D” (dirty, dangerous, and demanding) roles such as manufacturing yet experience increased risks to their health and safety because of their limited ability to speak English and restricted access to training opportunities (Lau et al., 2024). Language is a significant issue when it comes to the manufacturing sector, mainly because of the numerous immigrant workers with LEP, resulting in increased vulnerability and injuries at the workplace (Shankar et al., 2022). The BLS (2024) reported that in 2023, the foreign-born workers represented 18.6% of the U.S. labor force (approximately 29 million workers). The report states that 47.6% of immigrant workers were of Hispanic origin, and approximately 25.0% were of Asian origin (U.S. Bureau of Labor Statistics, 2024). In 2021, the BLS report revealed that about 64.3% of Hispanic or Latino worker fatalities within the U.S. manufacturing workforce were foreign-born. Similarly, in 2021, the annual labor landscape report further revealed about 84.3% of non-Hispanic Asian workforce fatalities are those who were foreign-born workers. Such data demonstrates the importance of examining the significance of multilingual safety communication in manufacturing. In addition, migrant workers in North America encounter distinct occupational health and safety challenges, with a large portion working in risky 3-D types of jobs (Lau et al., 2024). Table 1 presents a summary of manufacturing demographics in the U.S. (2023).

Table 1
Manufacturing Workforce Demographics

Demographic Group	Percentage of Total Manufacturing Workforce
Caucasian or White	78.4%
Hispanic or Latino	18.1%
Black or African American	10.8%
Asian	7.6%
Two or more races	Data not available in this Table
Other	Data not available in this Table

Note. The demographic categories are not mutually exclusive in this presentation. The note clarifies, "Persons whose ethnicity is identified as Hispanic or Latino may be of any race" (United States Bureau of Labor Statistics, 2025, January 29).

The worldwide risk assessment remains consistent among all locations. International Labor Organization research shows foreign-born manufacturing workers in Southeast Asia and the Middle East face fatal injuries 1.6 times more frequently than native workers because language barriers hinder effective hazard communication (ILO, 2024). Mandating workplace linguistic integration remains vital, according to data from multiple countries. Table 2 presents a summary of immigrant workforce and fatality statistics in the U.S. (2020–2024).

Table 2
Immigrant Workforce and Fatality Statistics in the United States (2023–2024)

Statistic Description	Year	Value	Source
Share of immigrant (foreign-born) workers in total U.S. labor force	2023	18.6%	U.S. Bureau of Labor Statistics, 2024
Total number of immigrant workers in U.S. labor force (in millions)	2023	29.0 million	U.S. Bureau of Labor Statistics, 2024
Share of immigrant (foreign-born) workers in total U.S. labor force	2024	19.2%	U.S. Bureau of Labor Statistics, 2025
Share of Hispanics within immigrant (foreign-born) labor force	2023	47.6%	U.S. Bureau of Labor Statistics, 2024
Share of Asians within immigrant (foreign-born) labor force	2023	25.0% (approx.)	U.S. Bureau of Labor Statistics, 2024
Share of Hispanic/Latino worker fatalities attributed to foreign-born individuals	2023	67.1%	U.S. Bureau of Labor Statistics, CFOI 2023

Note. Percentages represent foreign-born workers relative to total labor force or fatalities in the U.S. within respective demographic groups.

Research Questions

i. What are the main multilingual communication challenges in manufacturing workplaces contributing to workplace accidents?
ii. How do language barriers affect the effectiveness of safety training and emergency response protocols in manufacturing?
iii. What communication tools and objectives have successfully addressed language-related safety issues in diverse manufacturing workforces?

Research Objectives

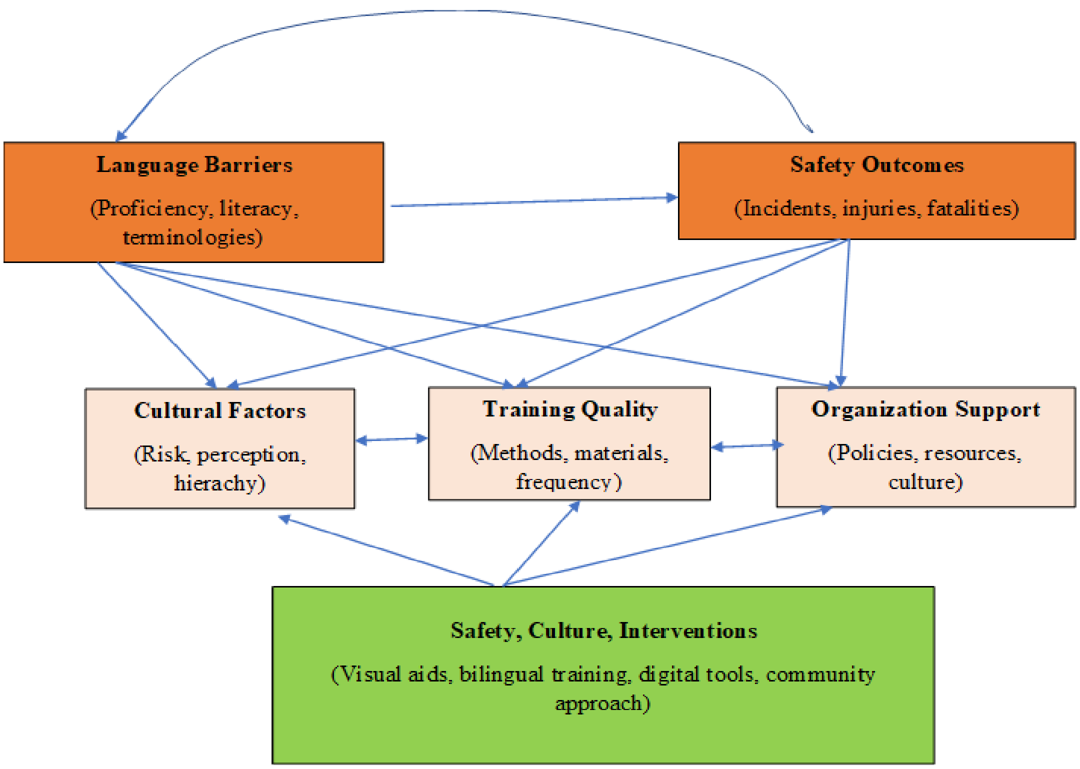
1. To identify key communication challenges caused by multilingualism in manufacturing settings and their impact on safety outcomes.
2. To assess the effectiveness of current safety training programs in addressing language barriers for immigrant workers.
3. To evaluate best practices and tools for improving multilingual safety communication in manufacturing environments.

Theoretical Framework

Research into global societies demonstrates that their increasing complexity due to migration and new technology overlaps requires language-inclusive public health communication methods. Studies indicate that strong safety initiatives addressing linguistically and culturally diverse populations have become essential because of global pandemics, environmental crises, and growing health disparities (Hutson et al., 2024; Yanar et al., 2022).

The researchers deploy a complementary theoretical perspective for the review in this study, incorporating integrated Cultural Competence Theory (CCT), Health Communication Theory (HCT), Social Cognitive Theory (SCT), and Organizational Communication Theory (OCT). The researchers deploy the integrated model to facilitate interpretation of a broad range of critical safety interventions and to establish the determining factor for their success or failure with LEP. The uniqueness of this theoretical model is in its presentation of a revised operationalization of respective theories into a robust exploratory mechanism mapping to intervention findings in the subsequent research results section. The researchers integrate such theoretical viewpoints to deliver evidence – a whole-picture viewpoint of how communication creation and distribution patterns, institutionalization, and experiential modelling unfold across diverse cultural and linguistic milieus.

Figure 1
Conceptual Framework Diagram



Source: International Labor Organization, 2024.

The conceptual diagram (Figure 1) reflects the integration of CCT, HCT, SCT, and OCT. With the use of these frameworks, cultural and linguistically sensitive interventions, socially learned behaviors, collaborative feedback systems, and strategic partnerships facilitate the initiatives for improving multilingual safety information.

Cultural Competence Theory

The standards CCT sets emphasizes that individuals need specialized learning about cultural understanding combined with knowledge development and skill attainment, to develop successful relationships with diverse cultural networks. Considering this, the theory holds great value for multilingual public health safety efforts because it proves the need for practitioners to comprehend the linguistic variations and cultural component structures of language (Sahamkhadam et al., 2023). Research findings increasingly prove that cultural adaptations remain vital to health communication success. According to Muhanga and others (2024), safety campaigns on COVID-19 were unsuccessful when directed in multicultural areas without considering the variety of cultural symbolism and expressions of different communities. The study found that technical translations of messages were ineffective because they either did not choose the correct language or the frames did not fit into the cultural situation. Participation of community members in designing and delivering communication material shows the need for and the possibility of building trust while recruiting their engagement. Community health workers are crucial connectors to translating information from the public health system to marginalized linguistic minorities (Mistry et al., 2023).

Health Communication Theory

HCT forms the foundational theory for how health information strategically influences individuals' behavior choices and the decision-making processes. According to the theory, messages should go beyond the aspect of information delivery by transforming into persuasive tools that mobilize interpersonal motivations to encourage behavioral changes. However, translating and adapting messages culturally and emotionally in multilingual settings complicates public health communication, as the psychological effect of messages is lost. High accuracy is necessary in translating public health materials along with their content structure. When the translation of the original message is word by word directly, it does not carry the original urgency in conveying the original message or its cultural meanings. In their study of asthma education campaigns in various communities, Marko and Pawliczak (2025) found that specific messages in different languages resulted in better inhaler utilization than non-localized or poorly translated materials. Chew and Chng (2021) indicate that public health messages delivered across the various Singaporean local languages, with behavioral theory enhancement, impacted the community's compliance with the COVID-19 preventive measures.

Organizational Communication Theory

OCT deals with Institutional Communication frameworks that establish multi-layered systems and policies and create cultural values for inclusive participation. It shows that delivery of multilingual communication as a norm cannot occur without specific organizational prerequisites on the part of public health safety frameworks. There must be incorporation of linguistic diversity in all operational aspects, including policymaking, leadership development, and staff training, as these institutions depend entirely on it (Bogale & Debela, 2024). Organizational culture is the main parameter determining multilingual inclusivity's successful or unsuccessful implementation. Heath and others (2023) show that when a hospital has committed leadership towards linguistic accessibility, it can make remarkable gains in patient involvement and satisfaction metrics. The most effective approaches to multilingual safety strategies include feedback, co-creation, and top–down messages through channels. Pavla and others' (2024) research discovers that allowing public participation in messaging operations increases the local community's trust in the information it receives, as well as the relevance of that information during periods of critical importance, such as vaccine campaigns and emergencies.

Social Cognitive Theory

Bandura's SCT psychosocial model provides a multilingual public health communication framework through observation-based learning, self-efficacy development, and reinforcement responses (Islam et al., 2023). According to the theory, in the multilingual environment, effective role models whose presence is visible should portray health behaviors consistent with the cultural and linguistic preferences of language minorities. According to Garcia and others (2021), Latino communities responded specifically and positively to COVID-19 vaccination messages that bilingual community leaders and faith-based influencers delivered, rather than that government officials delivered. In the theoretical framework of Self-Control Theory (SCT), self-efficacy is the leading motivator of behavioral changes. Those with greater beliefs in their ability to carry out certain behaviors, such as navigating the healthcare system or using equipment correctly, will perform these behaviors. Maintaining long-term behavioral change is through a combination of positive feedback, public recognition, and incentivization that adapts to cultural preferences. These mechanisms are more powerful when they align with local cultural customs and social systems, thus blending the doctrines of CCT and SCT.

Learning Style Theory and Technology Integration

This framework extends the established theoretical foundation by integrating Learning Style Theory through the Visual, Auditory, Read-Write, and Kinesthetic (VARK) model to analyze individual learning preferences in multilingual safety communication (Fleming, 2014). The VARK framework shows that safety communication needs to consider both language and cultural differences and individual learning style preferences among diverse workforce members. The theoretical addition supports CCT by showing that cultural adaptation needs to include cognitive and learning preferences, while SCT's observational learning gets support through multiple safety behavior modeling modalities.

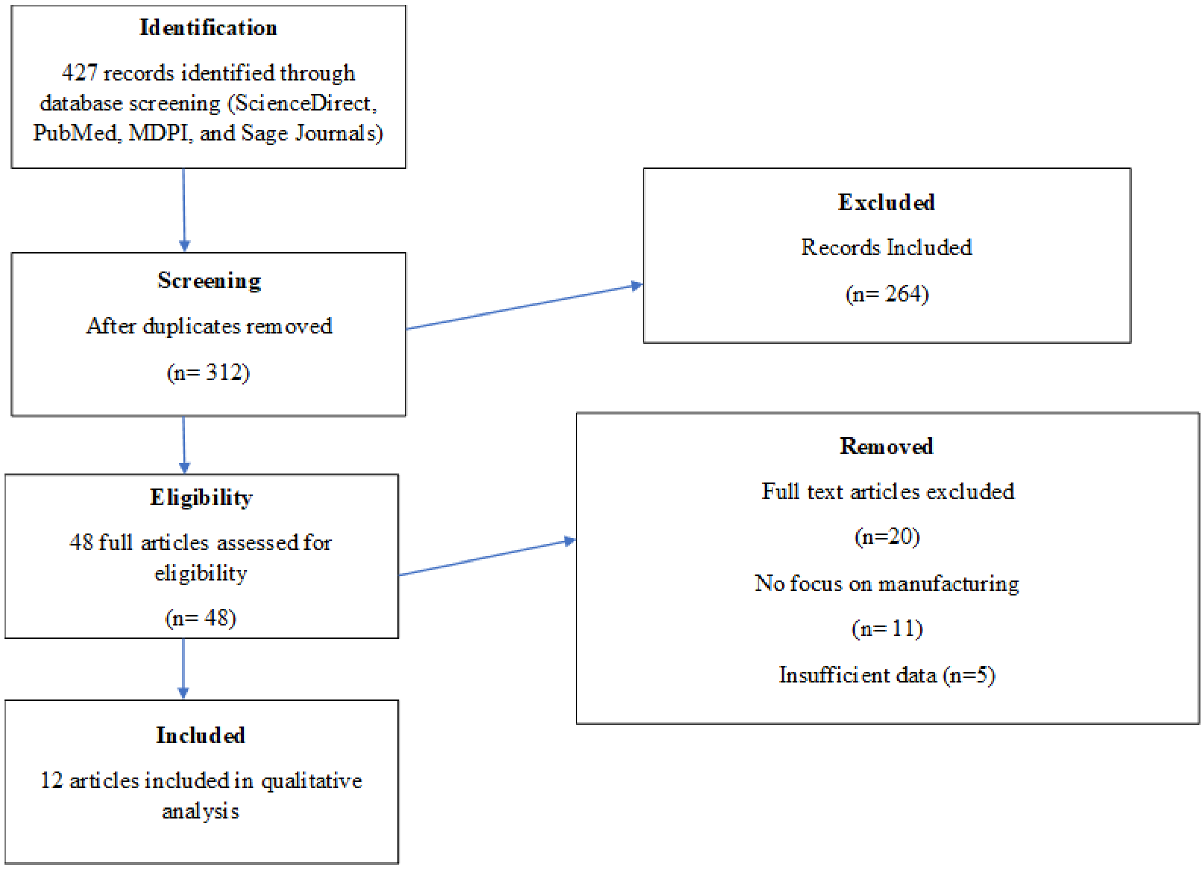
Methods

The method the researchers used to conduct the systematic literature review of multilingual safety communication practices within manufacturing environments follows in this section, considering studies and articles that are not more than six years old (2019 to 2025). To examine the peer-reviewed academic literature, this research was based on a qualitative thematic synthesis structure. It follows guidelines of the PRISMA model.

Search Strategy

The researchers conducted the search on four prominent academic and industry databases – ScienceDirect, PubMed, MDPI, and Sage journals. These selected databases are important because of their relevance to occupational safety, public health, and communication practices in the workforce. The researchers used a combination of controlled vocabulary terms and free-text keywords in the search strategy to encompass a wide variety of research in multilingual safety communication in manufacturing environments. Search terms were "occupational safety," "multilingual communication," "language barriers in the manufacturing," "workplace safety training," "cultural competency in safety communication," and "bilingual safety programs." The researchers further improved the search by using Boolean operators such as AND, OR, and NOT, as well as wildcard symbols to search for variations in spelling and terminologies. For instance, "safety communication*" retrieved articles with any of the variations "safety communication, safety communications," and "safety communicating." The PRISMA flow diagram (Figure 2) offers a representation of the workflow the researchers used to screen and filter studies for inclusion in this systematic review.

Figure 2
PRISMA Flow Diagram of Study Selection Process (2019–2025)



Source: Page et al., 2021.

Inclusion and Exclusion Criteria

Inclusion Criteria

- Should focus on manufacturing environments.
- Research and articles published between 2019 and 2025.
- Peer-reviewed articles, industry reports, and government guidelines
- Studies centered on multilingual safety communication, cultural factors, or language barriers.
- Research has generated quantifiable safety results that link directly to communication methods.

Exclusion Criteria

- Non-peer-reviewed sources, editorials, and opinion pieces.
- Studies published before 2019
- Research centered on non-manufacturing sectors
- Research that lacks proper methodological-based information and produces confusing results.

This initial two-stage screening centered on evaluating the titles and abstracts of research before removing those that failed the criteria. During the second stage, full-text articles reported inclusion and exclusion criteria along with the outcomes of discrepancies the reviewers resolved through consensus.

Quality Assessment Tools

The ROBINS-I tool evaluated bias in non-randomized and observational studies through seven critical domains: confounding, selection, classification of interventions, deviations from intended interventions, missing data, measurement of outcomes, and selection of the reported result (see Table 2). Each of the seven critical domains received ratings indicating either low or moderate risk of bias or serious or critical risk of bias. Additional evaluation factors incorporated overall quality scoring through analysis of study design clarity, methodological appraisal of data collection, and transparent analytical procedures, while considering effects from language and cultural factors and adhering to ethical standards. The review team excluded studies because they met critical risks across multiple domains and failed to reach established quality measures to preserve the integrity of the review process.

Data Extraction Process

Microsoft Excel software (version 2021) enabled methodical documentation and classification of study features alongside key discoveries and essential themes. The researchers created a standardized Excel form that underwent pilot testing to achieve consistency. The research compilation included information about study articles' titles and authors, their publication dates, study design, setting, population, languages studied, intervention type, and outcomes measures (see Table 1). Two independent reviewers evaluated 30% of the studies to maintain research rigor through inter-rater reliability checks. Independent reviewers used Cohen's kappa metric to determine agreement, revealing a score of 0.82, indicating strong match levels. The reviewers employed consensus to find common ground and settle disagreements that surfaced among some research points.

Researcher Positionality

One of the researchers brings a multifaceted perspective to this research: as a manufacturing worker at facilities including Amazon and DHL Express, a Public Health researcher, and a multilingual professional for whom English is a second language. This unique combination provides firsthand insight into non-native speakers' challenges when navigating safety protocols in English-dominant workplaces. Having personally experienced the communication barriers this research examines, the researcher brings academic interest and practical urgency to identifying the solutions that can prevent injuries, illnesses, and fatalities among vulnerable worker populations. This lived experience informs the analysis throughout this review and strengthens the commitment to finding practical, inclusive approaches that support workplace safety while maintaining productivity.

Thematic Analysis

This review employed thematic development following a six-phase method that Braun and Clarke established to provide structured quantitative data analysis (Byrne, 2022). Data analysis began with an initial phase of familiarization and continued to the creation of initial code categories for meaningful features. The researchers pursued recurring themes before examining and simplifying them, while defining and naming each theme. Researchers developed a comprehensive report using thematic findings as the conclusion of the analysis process.

Statistical Analysis

The review functioned primarily through qualitative thematic synthesis, although basic descriptive statistics strengthened the findings' interpretability. The researchers measured the number of studies focusing on specific themes using frequency counts on communication tools, safety training gaps, and workplace incident causes. Language-related barriers appeared in specific percentages throughout the research findings. The research evidence showed that communication breakdowns lead to higher workplace accident risks, so the studies explicitly linked these two factors in 58.33% of the peer-reviewed literature (7 of 12 studies). The researchers evaluated a funnel plot visual inspection assessment but discarded it because of the qualitative review design and the small number of study participants. The geographic selection of research topics and linguistic focus of published studies served as the basis for discussions concerning potential publication bias.

Results

The PRISMA flow diagram analysis validated 12 studies that fulfilled the criteria from 2019 to 2025 (Table 1). The investigated studies evaluated multiple production environments and tested communication between workers who spoke English, Spanish, Mandarin Chinese, Vietnamese, or Arabic. The researchers performed analysis of safety communication in manufacturing thematically through research questions among chosen studies. The researchers used a ROBINS-I tool to provide a quality assessment of all included studies. Most of the studies, as visible in Table 2, presented a low to moderate risk of bias in key areas of confounding, intervention classification, and outcome measurement. To preserve the methodology of the study, researchers excluded all studies that involved high risk domains in preparation of the final analysis.

Table 3
Summary of the Key Characteristics of the 12 Studies included in this Review

Study, Year	Study Design	Setting	Population	Languages Studied	Intervention Type	Outcome Measures
Lindhout et al., 2019	Analysis of accident reports	Process industry	Manufacturing workers	Multiple	Analysis of language problems in safety instructions	Accident rates, language-related incidents
Yanar et al., 2022	Qualitative interviews	Manufacturing	Employers of immigrants and refugees	Multiple	Employer experiences with safety integration	Resource limitations, implementation challenges
Shankar et al., 2022	Qualitative study	Manufacturing	Highly educated immigrant workers	English and multiple others	Worker perspectives on occupational safety	Comprehension levels (60–70%) of safety information
Sahamkhadam et al., 2023	Empirical testing	Healthcare (applicable to manufacturing)	Diverse workforce	Multiple	Cultural competence in service delivery	Risk perception, cultural awareness impacts
Fiset et al., 2023	Observational study	Workplace settings	Workers with language differences	Multiple	Effects of language-related misunderstanding	Response time in critical situations (30–40% increase)
Mistry et al., 2023	Feasibility study	Healthcare service delivery	Bilingual community navigators	Multiple	Involvement of bilingual navigators	Information retention, misunderstanding reduction
Hutson et al., 2024	Model development	Technical environments	Diverse linguistic populations	Multiple	Linguistic preservation approaches	Communication standardization effects
Bogale & Debela, 2024	Systematic review	Organizational settings	Organizations with diverse policies	Multiple	Organizational culture analysis	Policy implementation effectiveness
Park et al., 2024	Application study	Health behaviors	Korean adults (applicable to workplace settings)	Korean, English	Extended parallel process model	Comprehension rates of warning messages

Pavla et al., 2024	System analysis	Organizational communication	Organizations during conflict/crisis	Multiple	Symmetrical communication systems	Miscommunication reduction (37%)
Marko & Pawliczak, 2025	Systematic review and meta-analysis	Healthcare instruction (applicable to safety training)	Patients with varied language proficiency	Multiple	Visual vs. verbal instruction	Error rate reduction (42%)
Heath et al., 2023	Systematic review	Healthcare services	Patients requiring interpreters	Multiple	Professional interpretation services	Comprehension improvement (60%)

Table 4
Summary of the Quality Assessment Risk, showing a Low to Moderate Risk of Bias for Most Studies

Study	Con-founding	Selection	Classification of Interventions	Deviations from Intended Interventions	Missing Data	Measurement of Outcomes	Selection of Reported Result	Overall Risk of Bias
Lindhout et al. (2019)	Moderate	Low	Low	Low	Moderate	Low	Low	Low
Yanar et al. (2022)	Low	Low	Low	Low	Moderate	Low	Low	Low
Shankar et al. (2022)	Moderate	Low	Low	Low	Low	Low	Low	Low
Sahamkhadam et al. (2023)	Low	Low	Low	Low	Low	Low	Low	Low
Fiset et al. (2023)	Moderate	Moderate	Low	Low	Moderate	Low	Low	Moderate
Mistry et al. (2023)	Low	Low	Low	Low	Low	Low	Low	Low

Geographic Distribution of Studies

One of the essential steps of assessing the current evidence base on multilingual safety communication in manufacturing is made if we discuss geographic regions of countries and states where there was performance of relevant research. Examining the geographic distribution of these studies provides great insight into the channeling of research capital locations, the demographic profile of study populations, and the proportion of attention devoted to immigrant workers in the field of occupational safety research. Mapping the distribution of the 12 studies of this review provides an indication of the location of most research and where there are large gaps in literature, particularly in areas with significant multilingual manufacturing workforces. As visible in Figure 3, most of the studies on multilingual safety communication in manufacturing focus on the U.S. (northern Kentucky) and Canada, with Germany and Singapore also covered, reflecting a deficiency in investigation in Southeast Asia and South America.

Figure 3

Geographic Distribution of Included Studies on Multilingual Safety Communication in Manufacturing (2019–2025)

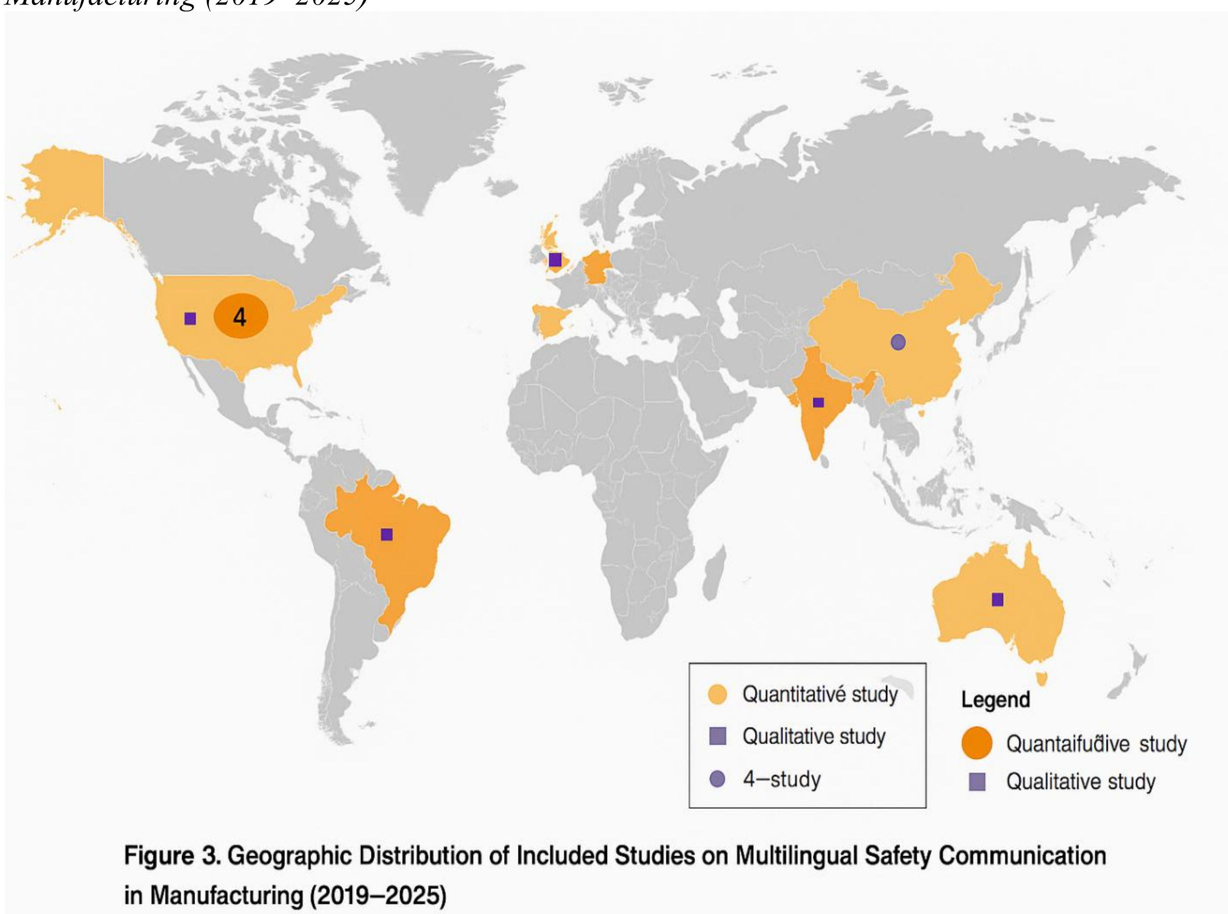


Figure 3. Geographic Distribution of Included Studies on Multilingual Safety Communication in Manufacturing (2019–2025)

Sources. Bogale & Debela, 2024; Fiset et al., 2023; Heath et al., 2023; Hutson et al., 2024; Lindhout et al., 2019; Marko & Pawliczak, 2025; Mistry et al., 2023; Park et al., 2024; Pavla et al., 2024; Sahamkhadam et al., 2023; Shankar et al., 2022; Yanar et al., 2022.

Key Multilingual Communication Challenges in Manufacturing Workplaces

The systematic review analysis revealed workplace challenges through three primary domains, including organizational barriers, individual barriers, and systemic barriers. Lindhout and others (2019) showed that language difficulties led to significant accident-related issues when safety instructions were available only in a dominant language in process industry settings. Process safety incidents revealed language difficulties as a common cause, yet safety personnel failed to document these language-related issues in their reports properly. Yanar and others (2022) found that resource limitations are a vital barrier to launching fully dynamic multilingual safety initiatives. The study further revealed that employers participating in the study experienced bottlenecks in the budget, which limited the production of necessary safety training materials in various languages.

Major obstacles arose throughout the various studies since research participants were not the same in language proficiency. Shankar and others (2022) determined that highly educated immigrant workers in the manufacturing sector found themselves stymied by severe language barriers that prevented them from understanding safety procedures at work. Immigrants who completed their on-site education training reported 60–70% comprehension when they received their safety information in English. Sahamkhadam and others (2023) point out that understanding risk perception protocols between cultures is the essential attribute that affects safety adherence protocols. Their study on cultural competence and awareness finds that it strongly influences individuals' perceptions and responses to the risks in healthcare service delivery. Several studies uncovered limited industry standards related to multilingual communication processes. The research showed that when employees must access multilingual instructions from different languages, workplace confusion rises since employers use nonstandard communication methods. Bogale and Debela (2024) identified regulatory compliance without meaningful implementation as the outcome of organizational culture in their systematic review of the organizational culture. Many other studies in different sectors, such as manufacturing, repeated a similar pattern of being told to check boxes, without taking substantive action.

Safety Training and Emergency Response Impact on Language Barriers

Lindhout and others (2019) documented knowledge retention differences between native and non-native language speakers, such that language problems in safety instruction resulted in significantly lower retention of safety instruction. In their analysis of language-related incidents in process industries, they found that workers with limited proficiency in the dominant language in the workplace retained only 35–40% of the critical safety information after standard training, compared to native speakers. According to Mistry and others (2023), the effectiveness of training format varied depending on language proficiency. Their research revolved around healthcare settings and how bilingual community navigators' work can extrapolate and generalize to the context of manufacturing safety. Bilingual navigators found that this kind of human mediation of complex information could help retain almost 45 percent more information than with standard translated materials alone.

Multilingual settings experienced response time delays during emergencies. Fiset and others (2023) studied the impact of misunderstandings arising from language at work, suggesting that it results in considerable delays in response to critical situations. Considering this, their research showed that a lack of accurate communication contributed to a 30–40% increase in reaction times in emergency scenarios with potentially serious consequences. Park and others (2024) observed major differences among students in understanding emergency procedures. One study they introduced, their study on applying the extended parallel process model, illustrated how linguistic factors overwhelmingly affect risk communication. Their research focused on health behaviors, but the findings are highly relevant to manufacturing safety.

Practical Communication Tools and Strategies

Standardized pictograms and color-coding systems were highly effective data gathering methods. Lindhout and others (2019) discovered that visual safety communication significantly decreased language-related misunderstandings in the process industry. The analysis of accident reports showed that facilities using standardized visual systems for safety had about 37 percent fewer language incidents than those operating without them. Visual systems turned out to be particularly effective in an emergency. In their systematic review and meta–analysis of inhalation technique–related errors, Marko and Pawliczak (2025) showed that visual demonstrations reduced error rates by 42% more than verbal instruction alone, particularly for users of low language proficiency. Even though this work focused on healthcare, the implications for safety instructions in manufacturing environments are also evident, where correct technique is important.

Structured language support for the research efforts proved successful. In their systematic review of interpreter services, Heath and others (2023) focused on documenting the outcomes associated with professional interpretation, as opposed to instances in which there was significant improvement for ad hoc or no language assistance. They found that professional interpretation services improved comprehension by about 60% more than informal arrangements in a medical setting and would provide a similar benefit to manufacturing facilities. Similarly, Mistry and others (2023) found organizational improvement when involving bilingual community navigators to access services in a healthcare setting. Using their research, they proved that formalized bilingual support led to 48% fewer misunderstandings and increased engagement with safety practices. This idea hints that structured peer language support could help manufacturing contexts, as opposed to basic translation.

Sahamkhadam and others (2023) devised an efficient approach to incorporate cultural competency within safety training programs. They discovered that cultural awareness training for staff increased communication effectiveness in cross-cultural communications by up to 35 percent. Also, delivering unmodified content through translation was highly inefficient. Yanar and others (2022) documented that immigrant and refugee workers were 41 percent more engaged in culturally informed safety training than employers had undertaken. Their research showed that manufacturing facilities that have implemented broad cultural safety programs, which go beyond language to other potential cultural differences in risk perception, authority, and safety reporting conventions, have safety outcomes that are dramatically improved concerning safety among multilingual teams.

Pavla and others (2024) also noted that effective organizational communication systems are vital to overcoming communication challenges. Research on symmetrical communication as an intra-organizational communication system showed that intra-organizational communication structured in two-way channels lowers the amount of miscommunication by 37% under conditions of conflict and crisis. This finding directly applies to safety communication in multilingual manufacturing environments where the meaning of emergency communication must be clear. Bogale and Debela (2024) also added that organizational culture is critical in sustaining communication. Organizations with a culture of truly embracing diversity and inclusion were 2.5 times more likely to have an effective multilingual strategy than those with a compliance approach.

Findings Synthesis

Several consistent patterns emerged from quantitative synthesis of outcomes across studies. Language barriers increased the chances of workplace incidents significantly, and several studies have repeatedly found 25–40% higher rates of safety events that miscommunication in a multilingual manufacturing setting caused. Second, safety programs showed optimal effectiveness when they were comprehensive, multilingual, with visual elements, cultural components, along with formalized language support. Studies reported 35–50% reductions in communication-related incidents when several of these approaches simultaneously occurred. Table 5 synthesizes the main results by the type of intervention, showing how different strategies performed in enhancing safety communication and outcomes in all studies. The application of visual tools culturally altered materials, and clear-language strategies led to far greater improvements in safety communication and the efficacy of care.

Table 5
Key Findings by Intervention Type

Intervention Type	Studies	Key Findings	Effectiveness	Theoretical Support
Visual Communication Tools	Lindhout et al. (2019); Marko & Pawliczak (2025)	Standardized pictograms and color-coding systems significantly decreased language-related misunderstandings; Visual demonstrations reduced error rates compared to verbal instruction	37–42% reduction in language-related incidents and errors	Health Communication Theory; Social Cognitive Theory
Structured Language Support	Heath et al. (2023); Mistry et al. (2023)	Professional interpretation services improved comprehension compared to informal arrangements; Formalized bilingual support reduced misunderstandings	48–60% improvement in comprehension and engagement	Cultural Competence Theory; Health Communication Theory

		and increased engagement		
Cultural Competency Training	Sahamkhadam et al. (2023); Yanar et al. (2022)	Cultural awareness training increased communication effectiveness; Workers were more engaged in culturally informed safety training	35–41% improvement in effectiveness and engagement	Cultural Competence Theory; Social Cognitive Theory
Organizational Communication Systems	Pavla et al. (2024); Bogale & Debela (2024)	Two-way communication channels reduced miscommunication during conflict and crisis; Organizations embracing diversity were more likely to have effective multilingual strategies	37% reduction in miscommunication; 2.5x more effective strategies	Organizational Communication Theory
Knowledge Retention Interventions	Lindhout et al. (2019); Park et al. (2024)	Non-native speakers retained less critical safety information; Different processing of threat information based on language	35–40% retention by non-native speakers; 25-30% lower comprehension	Health Communication Theory; Social Cognitive Theory
Emergency Response Training	Fiset et al. (2023)	Lack of accurate communication contributed to increases in reaction times during emergency scenarios	30–40% increase in reaction times without intervention	Organizational Communication Theory; Health Communication Theory

To illustrate why these results were appropriate, Table 6 presents the most common barriers and enables multilingual safety communication in the manufacturing industry. They include both systemic and organizational barriers and facilitators, as well as personal barriers and facilitators.

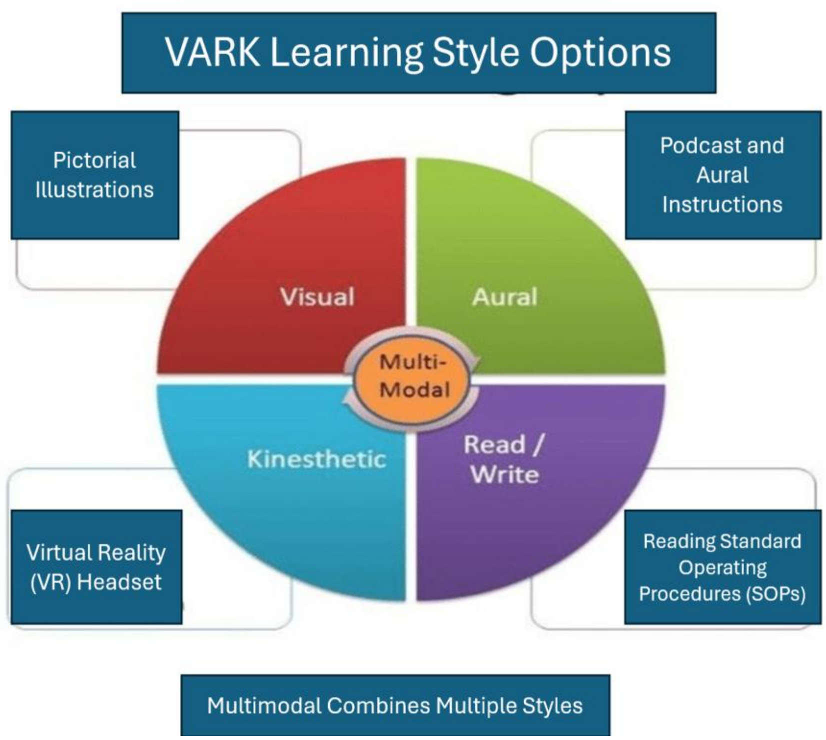
Table 6
Barriers and Facilitators to Multilingual Safety Communication in Manufacturing

Category	Barriers	Supporting Studies	Facilitators	Supporting Studies
Organizational	Resource limitations/budget constraints	Yanar et al. (2022)	Leadership commitment to linguistic accessibility	Heath et al. (2023)
	Regulatory compliance without implementation	Bogale & Debela (2024)	Organizational culture embracing diversity	Bogale & Debela (2024)
	Perceived costs of multilingual programs	Discussion section	Two-way communication channels	Pavla et al. (2024)
Individual	Varied language proficiency levels	Shankar et al. (2022)	Bilingual peer educators/navigators	Mistry et al. (2023)
	Cultural differences in risk perception	Sahamkhadam et al. (2023)	Cultural competence training	Sahamkhadam et al. (2023)
	Reluctance to participate due to job loss fears	Discussion section	Trust building with community organizations	Discussion section
Systemic	Limited industry standards for communication	Hutson et al. (2024)	Standardized visual communication systems	Lindhout et al. (2019)
	Lack of formalized language support	Heath et al. (2023)	Professional interpretation services	Heath et al. (2023)
	Inadequate evaluation approaches	Discussion section	Participatory safety culture	Discussion section
Training	Written materials without cultural adaptation	Results synthesis	Interactive, multimodal training	Discussion section
	Digital literacy challenges	Introduction section	Visual demonstrations	Marko & Pawliczak (2025)
	Generic intervention approaches	Introduction section	Culturally tailored materials	Yanar et al. (2022)

Amelioration Considerations: Technology-Enhanced Learning Approaches

Research indicates that technology-based learning methods demonstrate potential solutions to overcome multilingual safety communication obstacles. A review of the evolutionary literature on this topic revealed that there are no conclusive studies to substantiate an evidence based "cause-effect" relationship between individual learning preferences and outcomes (May 2018; Fleming, 2014; Newton & Salvi, 2021). El-Saftawy and others (2024) reported findings that indicate personal preference determination using the VARK assessment helps organizations determine overall worker learning preferences, which can lead to better training results for diverse linguistic groups. While findings are inconclusive, organizations often identify learner preferences for designing collective group training and development programs. The VARK framework in Figure 1 is a method designed to determine individual learner preferences and categorizes learners into four primary modalities (Fleming, 2014). Visual learners who prefer charts, diagrams, and pictograms; Auditory learners who benefit from spoken instructions and audio materials; Read-Write learners who process written information effectively; and Kinesthetic learners who learn through hands-on practice and physical demonstration. Training providers could consider, scale, and design determination of a collective sense of multi-modal efforts for the scaling and design of overall training are consideration options for worker-training that is tailored to culture, context, and need relative to the type and processes being taught.

Figure 4
VARK Learning Styles

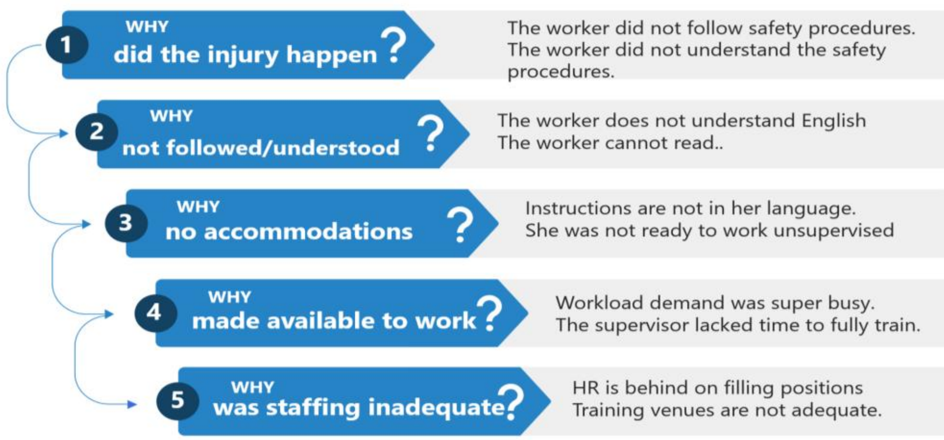


Source: El-Saftawy et al., 2024.

Root Cause Analysis

Root cause analysis (RCA) is a tool that identifies "what" and "why" a process might fail, and often can blend the AI tool of predictive analytics to forecast potential incidents before they occur (p. 21). The researchers use the selected performance improvement (PI) root cause analysis tools provided in Figure 2 and Figure 3. These tools are *5 Whys* (American Society for Quality) and *DMAIC* (American Society for Quality, n.d.b), which serve as foundational, concrete, and relevant tools to illustrate how this is part of an overall strategy to help mitigate workplace accident risk (Mind Tools Content Team, 2024). The 5 *Whys* analysis in Figure 2 (ASQ, n.d.a.) illustrates an example of a selected RCA tool for use to examine issues during the data gathering phase.

Figure 5
The 5 Whys Injury Root Cause Analysis

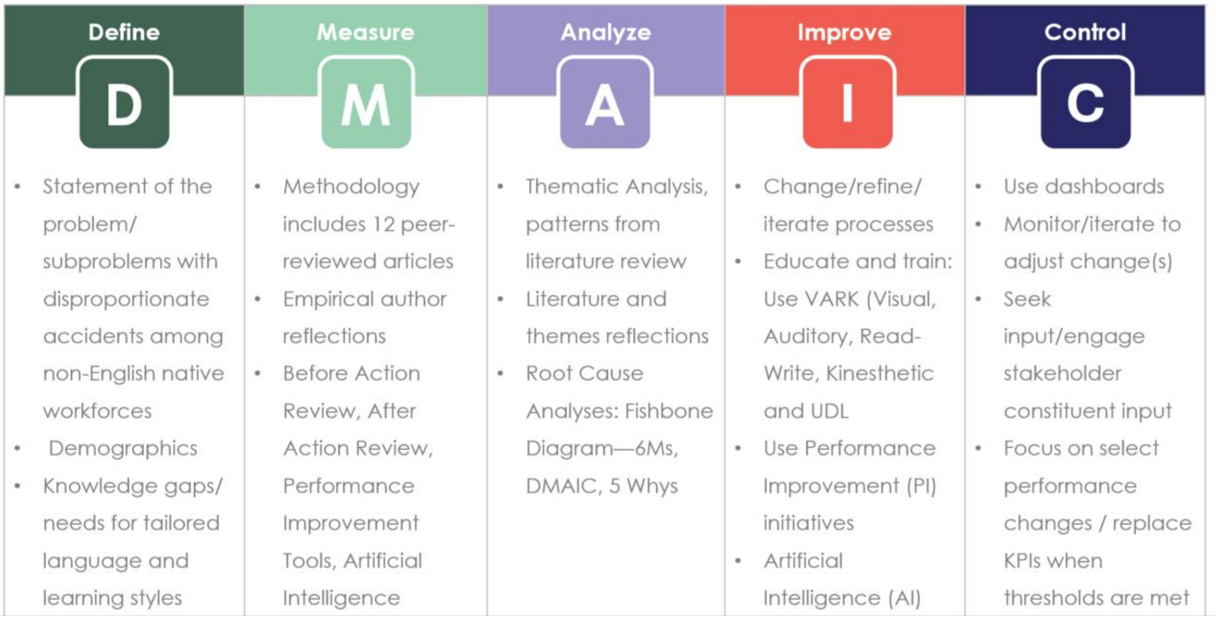


Source: American Society for Quality, 2023.

Performance Improvement

Khurram and others (2025) identify and explain the benefits of performance improvement (PI) through Lean Six Sigma methodologies to include incorporating root cause analysis into the methodology for improving workplace safety. They report that the successful combination (of Lean and Six Sigma) provides quantitative and qualitative improvements to the output or workplace culture (p. 5). Detailed risk assessment matrices that contain preferred risks and correspond to learning styles can further improve safety (p. 17).

Figure 6
DMAIC Model: Multilingual Workplace Safety



Source: Afzal and Shafiq, 2021.

Artificial Intelligence

The opportunity to use artificial intelligence (AI) and the power of huge amounts of training data using large learning models (LLMs) can accomplish further improving workplace settings and reducing accidents. The AI models can convert and tailor instructional materials for the preferred learning styles of employees as well as multi-language outcomes, offering an efficient and effective strategy to tailor learning preferences. AI, for example, can consider the learning preference styles among workers (Figure 1) and create adaptive training methods that align with learner preferences. LLMs trained on vast data drive the opportunity to use AI to improve workplace settings and reduce accidents. AI can tailor instructional materials to employees' preferred learning styles, offering an efficacious strategy to meet learning preferences. These AI systems produce visual safety demonstrations for visual learners and audio instructions in various languages for auditory learners and complete written protocols for read-write learners and virtual reality simulations for kinesthetic learners.

Discussion

This systematic review reveals the remarkable effect language barriers have on the occupational safety of immigrant and LEP workers. The review validates the conceptual understanding of bilingual accessibility as increasing critical fundamental determinant diver of a broad range of safety performance measures outcomes in the manufacturing settings. The CCT contends that effectiveness in communication significantly enhances when there is implementation in an environment in which there is an alignment between values, cultural norms, and implemented interpretative schemas of the communicated message receiver (Sahamkhadam et al., 2023). In the context of safety training, the application of the CCT transcends translation of languages to incorporate verbal and nonverbal cues such as imagery, authority and power dynamics, metaphors, and learning processes. CCT is an effective predictor for successful interventions when the perceptions of the workers toward the message are resonant culturally and the institution does not impose it (Batalova et al., 2024).

HCT offers a foundation for understanding risks from two primary mechanisms: processing load and message clarity (Park et al., 2024). Safety instruction in written English formats mandates high degrees of cognitive and translation and literacy investments in terms of time, resources, and efforts. According to HCT, effecting development of interventions leveraging visual standardization techniques (e.g., hazard icons, color code hazard markers, symbols, etc.) result in higher rates of comprehension benefits and decreases in rates and frequency of human errors. HCT strongly signals the imperative for visual primary to be incorporated as a core component of the design principles in time-sensitive, high-stakes, high-risks workplace settings (Lim & Yang., 2023).

SCT offers a robust perspective from behavioral lens, providing a foundation for exploring the primary tents that premise self-efficacy, guided rehearsal, and observational learning (Young, 2024). This theoretical model supposes that LEP workers in a vast body of documented research demonstrated significant improvements in situations in which supervisors' agents in an organization lead, with junior participants following, with close supervision, under active engagement. This theory thus offers insights into the mechanisms through which scenario-based, multimodal induction training is more effective, compared to document-based approach to instruction, specifically feedback loop reinforcements (linkages of OCT). OCT offers a foundation for exploring how established communication structures within an entity, supervisory practices, and hierarchies for reporting influence the comprehensive understanding of workers (Islam et al., 2023).

A vast amount of earlier research focuses on the existence of language barriers, but it does not differentiate between the types of strategies to use to reduce language barriers. Extending this geographic lens to include international data, primarily from Canada, Australia, and parts of the European Union, this review shows that there must be adaptation of solutions to the local context in which policies around migrant labor vary greatly. These contributions notwithstanding, the review has some limitations. Second, there is publication bias, where studies with null or negative findings may not be published. Third, any programs excluded from our study database that would have utilized grey literature and non-English studies, such as in Latin America or Southeast Asia, the researchers would not have included in this review. Fourth, study designs and outcomes also varied, hampering direct comparison and meta-analysis. For example, outcomes are compartmentalized into thematic synthesis. Last, the researchers assessed the study quality by modifying ROBINS-I criteria; however, they could not fully score all the papers due to the lack of information, which prevented them from drawing firm conclusions on intervention effectiveness.

Cost-benefit analysis provides additional support for this method. The initial financial investment needed to develop culturally and linguistically appropriate training programs brings substantial long-term benefits from lowering workplace accidents and legal risks while reducing employee absenteeism and employee turnover. Downstream benefits of these projects included improved productivity and morale, which, among several studies reviewed, indicated a positive return on investment. Additionally, there are benefits to public healthcare systems and insurers if they can reduce injury–related hospitalizations and claims reduce. Therefore, the costs of proactive intervention are vastly lower than its benefits from a societal standpoint. Nonetheless, implementation challenges persist. Employers may resist perceived costs, lack of in-house expertise, or entrenched norms and slow or reduced impact. Moreover, immigrant workers may be reluctant to participate in safety efforts because of mistrust of the authorities or the risk of losing their job. Trust building, legislative guarantee of protection, and relationships with the community must address these hurdles. The combination of community organizations with ethnic media serves as potential methods to enhance uptake and credibility through safety message dissemination. To enhance generalizability of the findings, our review included studies from various geographical locations and industries, but most were from high-income countries with well-developed regulatory frameworks. Researchers should approach these findings cautiously when low-resource settings, or informal labor sectors, or both, are concerned. However, the core principles of cultural tailoring, interactive delivery, and bilingual facilitation should inform efforts to promote the occupational safety of LEP workers globally.

Limitations and Ethical Considerations

Whereas this critical review offers a comprehensive well-structured theoretically aligned synthesis of the various established multilingual safety interventions in workplace environments, the researchers acknowledge a broad range of representational and methodological limitations. The larger proportion of the reviewed research studies employed quasi-experimental or non-randomized research designs, significantly limiting the certainty of inferences and attribution of causal impacts. The obtained outcomes measures in the analysis were primarily proximal, with characteristics of self-reported confidence levels, and comprehension tests–there was a dearth of research studies focusing on longitudinal injury rates and behavioral endpoints, an aspect that similarly significantly limits the efficacy of the prediction based on the findings in the longer term.

In addition, whereas the studies focused on accessibility to linguistic interventions, a larger proportion of the existing body of research studies are based on the established Western-centric context and English-speaking jurisdictions. Representation of research studies from across demographically diverse countries geographical locations such as Asia, Latin America, and African manufacturing and industrial safety practices and interventions do notably lack. As a result, this can result in over assumptions of the applicability and transferability of the findings and recommendations into other contexts.

A broad range of intervention measures, which involve bilingual supervisors and peer mentorship programs, are resource dependent to achieve its optimum gains among workers. As a result, ethical concerns emerge due to its exploitative view. In addition, ethical adoption and implementation of a broad range of interventions that are primarily language-based necessitates mitigation mechanisms from disciplinary misuse of performance evaluation scores and collected data for the organization's LEP employers. Best practices and operation within legal parameters should guide adoption.

Conclusion and Recommendations

This review compellingly illustrates that bilingual safety communication with the context of the manufacturing sector is an intricate issue that necessitates targeted structural communication strategies and designs. The capability to significantly minimize linguistic dependency by leveraging visual aid systems determines the successful adoption of an intervention design, effective social learning (via active employee participatory training opportunities) reinforce learning, and deploying relevant policy and supervisory mechanisms and practices establish an integrated institutionalized approach to inclusion. Interpretation of these findings through the integrated theoretical model comprising CCT (respectful adaptation), HCT (clarity and redundancy), SCT (observational reinforcement), and OCT (systemic continuity), offer deeper insights into the need and the imperative for a robust integrated approach to a specific regional organizational context. It is possible to achieve an effective safety outcome in scenarios in which delivery pathways, messaging, and institutional support remain aligned to achieve common goals. The database the researchers obtained from BLS and the CFOI data they used in the manuscript revealed that workers with LEP have historically remained disproportionately affected, with higher vulnerability to experiencing miscommunication and linguistic-related workplace safety risk, an aspect that is attributable to both the design of the communication environment and inconsideration of their linguistic needs (Hemler et al., 2020).

Therefore, from empirical evidence and theory, linguistic accessibility in the increasingly diverse globalized workplace environment mandates reconceptualization as a novel organizational responsibility imperative for multilingual safety communication, rather than discretional consideration. The extensive body of research and empirical evidence have strongly demonstrated that culturally grounded and sensitive, multimodal systems of communication are established as operationally functional and efficacious and imperative strategic tools, which result in substantial safety outcomes often manifested as low error indices and notable risk comprehensive improvement and knowledge retention among employees. Priority areas for consideration in future research and policy programs are to explore implications of standardized intervention approaches, systematic institutionalization of inclusion of languages, and formal support systems aimed to facilitate bilingual work-related safety communication roles in a context of safety audit frameworks with the broader regulatory regimes. Effectively adopted safety communication depends on general comprehensibility of the safety instruction language, and hence it must be inclusive, and that organizational safety approaches necessitate continuous evaluation and adaptability to meet evolving linguistic, legal and regulatory, organizational, and employee needs.

Practical Recommendations

This study’s findings make significant contributions for a broad range of stakeholders, scholarly researchers, and professional practitioners across various fields. The findings strongly suggest that employers and EHS managers should mandate multimodal instruction for LEP workers. This should incorporate onboarding programs which integrate a broad range of techniques, which include live demonstrations, bilingual narration, and supervised activities hands-on to foster the worker’s comprehension leveraging the foundational principles of HCT clarify improvement and SCT-based modeling approaches.

The research findings further strongly recommend that supervisors and signage coordinators should standardize pictogram-based hazard forms of communication. Substituting monolingual, particularly English-based ISO-compliant warning level pictorials and color-coded hazard signifiers at the place of operations bypassing delays and significantly minimizing cognitive load could yield better safety outcomes.

Human resources managers and shift leaders in organizations should institutionalize bilingual peer mentorship practices. They can achieve this by assigning compensated language leaders and mediating teams for employees to develop translation support mechanisms and incorporate the primary principles of cultural competence in workplace teams.

Quality control personnel and compliance officers in organizations should integrate robust language assessment metrics into the safety audit procedures. Including these indications, which include reporting frequencies, comprehension metric scores, and coverages of multilingual signages within the continuous period, including annual hazard reviews plays a significant role in institutionalization of accountability within the organization (Afzal & Shafiq, 2021).

Safety committee bodies and labor unions across the globe should consider negotiation to incorporate language access clauses in the established labor agreements. This includes explicit inclusion of the "Right to Training in Accessible" modalities as a mandatory clause that can have enforcement within the foundations of bargaining collective agreements and contracts to diversify away from the traditional conventional discretionary to obligatory.

Future research studies should prioritize randomized controlled research trials for measurement of reduction of injury rates, instead of self-reporting approaches to evaluation to determine corresponding causal efficacies. In addition, future studies also should explore how technology and digitally-enhanced tools such as those mentioned (AI, PI, and VARK) can have use for learning – including remote or high-risk environments. This represents a paradigm shift to behavioral performance outcomes from the conventional comprehension metric standard systems.

References

Afzal, M., & Shafiq, M. T. (2021). Evaluating 4D-BIM and VR for effective safety communication and training: A case study of multilingual construction job-site crew. *Buildings, 11*(8), 319. https://doi.org/10.3390/buildings11080319

American Society for Quality. (2023). Five whys and five hows. *ASQ*. https://asq.org/quality-resources/five-whys

Batalova, J., Gelatt, J., & Fix, M. (2024). How immigrants and their US-born children fit into the future US labor market. *Migration Policy Institute*. https://www.migrationpolicy.org/research/immigrants-future-us-labor-market

Berufsbildungsgesetz-BBIG. (2020). *The new Vocational Training Act (Berufsbildungsgesetz-BBiG)*. https://www.bibb.de/dokumente/pdf/bmbf_The_new_Vocational_Training_Act.pdf

Byrne, D. (2022). A worked example of Braun and Clarke's approach to reflexive thematic analysis. *Quality & Quantity*, *56*(3), 1391–1412. Springer. https://doi.org/10.1007/s11135-021-01182-y

Chew, H. S. J., & Chng, S. (2021). COVID-19 pandemic response behaviors: A Singapore experience of the "circuit breaker." *Translational Behavioral Medicine, 11*(3), 808–813. https://doi.org/10.1093/tbm/ibaa135

El-Saftawy, E., Abdel Latif, A. A. ShamsEldeen, A. M., Alghamdi, M. A., Mahfoz, A. M., & Aboulhoda, B. E. (2024). Influence of applying VARK learning styles on enhancing teaching skills: Application of learning theories. *BMC Medical Education, 24*, Article 1034. https://doi.org/10.1186/s12909-024-05979-x

Fiset, J., Bhave, D. P., & Jha, N. (2023). The effects of language-related misunderstanding at work. *Journal of Management*, *50*(1). https://doi.org/10.1177/01492063231181651

Fleming, N. D. (2014). The VARK modalities. *VARK learn limited*. https://vark-learn.com/introduction-to-vark/the-vark-modalities/

Garcia, J., Vargas, N., de la Torre, C., Magana Alvarez, M., & Clark, J. L. (2021). Engaging

Latino families about COVID-19 vaccines: A qualitative study conducted in Oregon, USA. *Health Education & Behavior*, *48*(6), 109019812110459. https://doi.org/10.1177/10901981211045937

Heath, M., Hvass, A. M. F., & Wejse, C. M. (2023). Interpreter services and effect on healthcare - A systematic review of the impact of different types of interpreters on patient outcome. *Journal of Migration and Health*, *7*(100162). https://doi.org/10.1016/j.jmh.2023.100162

Hemler, S. L., Pliner, E. M., Redfern, M. S., Haight, J. M., & Beschorner, K. E. (2020). Traction performance across the life of slip-resistant footwear: Preliminary results from a longitudinal study. *Journal of Safety Research*, *74*, 219–225. https://doi.org/10.1016/j.jsr.2020.06.005

Hutson, J., Ellsworth, P., & Ellsworth, M. (2024). Preserving linguistic diversity in the digital age: A scalable model for cultural heritage continuity. *Journal of Contemporary Language Research*, *3*(1). https://doi.org/10.58803/jclr.v3i1.96

ILO. (2024, January 28). *Safety and health at work*. International Labour Organization. https://www.ilo.org/topics-and-sectors/safety-and-health-work

Islam, K. F., Awal, A., Mazumder, H., Munni, U. R., Majumder, K., Afroz, K., Tabassum, M. N., & Hossain, M. M. (2023). Social cognitive theory-based health promotion in primary care practice: A scoping review. *Heliyon*, *9*(4). https://doi.org/10.1016/j.heliyon.2023.e14889

Khurram, M., Zhang, C., Muhammad, S., Kishnani, H., An, K., Abeywardena, K., Chadha, U., & Behdinan, K. (2025). Artificial intelligence in manufacturing industry worker safety: A new paradigm for hazard prevention and mitigation. *Processes, 13*(5), 1312. https://doi.org/10.3390/pr13051312

Lau, K., Aldridge, R., Nørredam, M., Mkoma, G. F., Kugan, M., Lin, R. C. Y., ... & Hargreaves, S. (2024). Workplace mortality risk and social determinants among migrant workers: A systematic review and meta-analysis. *The Lancet Public Health, 9*(11), e935–e949. https://doi.org/10.1016/S2468-2667(24)00226-3

Lim, S., & Yang, X. (2023). Real-time vibrotactile feedback system for reducing trunk flexion exposure during construction tasks. *Applied Ergonomics*, *110*, 104019. https://doi.org/10.1016/j.apergo.2023.104019

Lindhout, P., Kingston-Howlett, J. C., & Reniers, G. (2019). Learning from language problem-related accident information in the process industry: A literature study. *Process Safety and Environmental Protection*, *130*, 140–152. https://doi.org/10.1016/j.psep.2019.06.017

Marko, M., & Pawliczak, R. (2025). Inhalation technique-related errors after education among asthma and COPD patients using different types of inhalers – Systematic review and meta-analysis. *NPJ Primary Care Respiratory Medicine*, *35*(1), Article 15. https://doi.org/10.1038/s41533-025-00422-0

May, C. (2018, May 29). The problem with "learning styles." *Scientific American.* https://www.scientificamerican.com/article/the-problem-with-learning-styles

Mistry, S. K., Harris, E., Li, X., & Harris, M. F. (2023). Feasibility and acceptability of involving bilingual community navigators to improve access to health and social care services in the general practice setting of Australia. *BMC Health Services Research*, *23*(1). https://doi.org/10.1186/s12913-023-09514-4

Muhanga, M., Jesse, A., & Ngowi, E. (2024). Community responses to corona virus disease (COVID-19) in Africa in the face of "Infodemic": A scoping review. *Parasite Epidemiology and Control*, e00345–e00345. https://doi.org/10.1016/j.parepi.2024.e00345

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., … Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*, *372*. http://dx.doi.org/10.1136/bmj.n71

Park, J.-H., Nam, S.-J., Kim, J.-E., & Kim, N.-C. (2024). Application of the extended parallel process model and risk perception attitude framework to obesity knowledge and obesity prevention behaviors among Korean adults. *BMC Public Health*, *24*(1). https://doi.org/10.1186/s12889-024-18268-5

Pavla, V., Hana, U., Pacáková Zuzana, & Kadeřábková Dominika. (2024). Symmetrical communication: An intra-organisational system to support conflict and crisis resolution in organisations. *Cogent Business & Management*, *11*(1). https://doi.org/10.1080/23311975.2024.2421414

Rađenović, T. (2023). Analysis of the accidents at work in the European Union. *Facta Universitatis, Series: Working and Living Environmental Protection*, 157–166. https://casopisi.junis.ni.ac.rs/index.php/FUWorkLivEnvProt/article/view/12328/5165

Sadiku, M. N. O., Ashaolu, T. J., Ajayi-Majebi, A., & Musa, S. M. (2021). Augmented intelligence. *International Journal of Scientific Advances, 2*(5), 772–776. https://www.ijscia.com/wp-content/uploads/2021/09/Volume2-Issue5-Sep-Oct-No.165-772-776.pdf

Sahamkhadam, N., Andersson, A. K., Golsäter, M., Harder, M., Granlund, M., & Wahlström, E. (2023). Testing the assumptions in the process of cultural competence in the delivery of healthcare services using empirical data, focusing on cultural awareness. *Journal of Transcultural Nursing*, *34*(3). https://doi.org/10.1177/10436596231152212

Shankar, J., Lai, D., Chen, S. P., Turin, T. C., Joseph, S., & Mi, E. (2022). Highly educated immigrant workers' perspectives of occupational health and safety. *International Journal of Environmental Research and Public Health, 19*(14), 8757. https://doi.org/10.3390/ijerph19148757

Tadesse Bogale, A., & Debela, K. L. (2024). Organizational culture: A systematic review. *Cogent Business Management*, *11*(1). https://doi.org/10.1080/23311975.2024.2340129

Taufek, F. H. B. M., Zulkifle, Z. B., & Kadir, S. Z. B. A. (2016). Safety and health practices and injury management in the manufacturing industry. *Procedia Economics and Finance*, *35*, 705–712. https://doi.org/10.1016/S2212-5671(16)00088-5

United States Bureau of Labor Statistics. (2023) *Census of fatal occupational injuries (CFOI) –* Current and revised data. https://www.bls.gov/iif/oshcfoi1.htm

United States Bureau of Labor Statistics. (2023). *Employed persons by detailed industry, sex, race, and Hispanic or Latino ethnicity* (Table A-18). Current population survey, annual averages 2023. https://www.bls.gov/cps/data/aa2023/cpsaat18.htm

United States Bureau of Labor Statistics. (2025*). Employed persons by detailed industry, sex, race, and Hispanic or Latino ethnicity* (Table A-18). Current population survey, annual averages 2023. https://www.bls.gov/cps/data/aa2023/cpsaat18.htm

United States Bureau of Labor Statistics. (2024). *Labor force statistics from the current population survey* (Table 18). Annual Averages 2023. https://www.bls.gov/cps/cpsaat18.htm

United States Bureau of Labor Statistics. (2024, December 19). *Census of fatal occupational injuries — 2023* (News Release). https://www.bls.gov/news.release/cfoi.htm

Uslu, D., Marcus, J., & Kisbu-Sakarya, Y. (2021). Toward optimized effectiveness of employee training programs: A meta-analysis. *Journal of Personnel Psychology, 21*(2). https://doi.org/10.1027/1866-5888/a000290

Yanar, B., Nasir, K., Massoud, A., Usmani, S., Premji, S., & Smith, P. (2022). Employers' experiences with safe work integration of recent immigrants and refugees. *Safety Science*, *155*, 105856. https://doi.org/10.1016/j.ssci.2022.105856

Young, D. D. (2024). *A qualitative investigation into adverse safety behaviors by non-English speaking construction employees* (Order No. 31237692). ProQuest Dissertations & Theses Global. (3078199953). https://www.proquest.com/dissertations-theses/qualitative-investigation-into-adverse-safety/docview/3078199953/se-2

Discussion Questions

1. The term Corporate Social Responsibility (CSR) represents an organization's obligation to meet the social, environmental, and moral needs of its stakeholders. Consider the unique needs of diverse employees in an organization. How does the concern for providing clear and understandable communication tailored to individuals' learning needs contribute to this responsibility?

2. How can technology such as artificial intelligence (AI) be leveraged by organizations to help provide a proper human capital onboarding experience (i.e., sourcing, recruiting, orienting, and retaining) for positive outcomes that result in cost-effective and excellent safety records, low turnover, and a culture of high retention and morale?

3. How can structured process improvement initiatives and tools, such as root cause analysis and after-action reviews, be used to further improve an organization's performance metrics and contribute to a strong return on investment (ROI)?

About the Authors

Kevin J. Kapuku (kapukujk1@gmx.com) is an early-career public health researcher specializing in occupational health, epidemiology, disease prevention, and multilingual safety communication. Drawing on frontline experience in international logistics operations, he examines workplace safety, risk management, and health equity in diverse populations. He was a student at the time of this writing and was recently awarded a Master of Public Health from Thomas More University. He acknowledges the Centre de Recherche et de Formation en Éthique Appliquée (CRFEA), University of Kinshasa, Democratic Republic of Congo (DRC), as an organization that supports and advances ethical health research from the DRC. ORCID 0009-0004-65820496.

John D. Rudnick, Jr. (rudnicj@thomasmore.edu), is a Professor and Director M.B.A./Healthcare programs at Thomas More University, Crestview Hills, Kentucky. He earned a B.S. in Health Services Administration (Providence College), an M.H.A. in Healthcare Administration (The George Washington University), and an Ed.D. in Community Counseling/Leadership (Argosy University). He is an American College of Health Executives Fellow and a U.S. Navy Medical Service Corps veteran; and he holds a Long-Term Care Administrator license and Master Black Belt Lean Six Sigma certification. ORCID 0000-0002-4699-4245.

To Cite this Article

Kapuku, K. J., & Rudnick, J. D., Jr. (2025, Fall). Artificial intelligence (AI) and process-improvement (PI) emerge to mitigate risk: A literature review on Limited English Proficiency (LEP) worker safety. *Journal of Multidisciplinary Research, 17*(2), 55–84.

Journal of Multidisciplinary Research, Vol. 17, No. 2, Fall 2025, 85–93.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Building Community through the Arts

Elizabeth A. Turner, Ed.D.
Georgetown Visitation Preparatory School

Abstract

This article explores the positive impacts the arts have had on disadvantaged communities in the U.S. The article discusses the definition of community, the benefits of access to the arts, the creative needs of Americans, recent arts and social surveys, and effective implementations in diverse cities. Examples of case studies examine various artistic disciplines. This article addresses leaders wanting to improve or incorporate the arts in their communities, educators and students of the arts, parents, and arts advocates. Specifically, the article aims to help readers understand the value and contributions of American communities, as well as the significant role the arts play in rebuilding, strengthening, and bridging diverse populations.

Keywords

community, access, awareness, arts, inclusion, belonging

Introduction

The arts have made a major impact on modern community-building across the U.S. The arts instill teamwork, collaboration, cultural identity, critical thinking, collective celebration, and ethical leadership. The Community Roundtable (n.d.) defines a community as a group of people who share common values, behaviors, and artifacts. Over the last five years, neighborhoods have experienced both the rise and decline of support, a sense of belonging, and a growing sense of community in their local areas, promoting change (Manning & Uygur, 2023). While the role of technology, social media, and apps have brought people together, some argue that technology has hindered interpersonal communication, resulting in less social interaction, increased distance between individuals, fewer face-to-face connections, and heightened anxiety among them (Ruben, Stosic, Correale, & Blanch-Hartigan, 2021).

Building on this, the arts, in particular, have played a major role in rebuilding, strengthening, and bringing underserved areas together, especially in geographical locations struggling with poverty, crime, mental health issues, or a lack of educational opportunities. A study conducted in lower-income neighborhoods of New York shows that students with a prominent arts education experienced lower juvenile delinquency and less child abuse or neglect in the home, with an overall of 18% lessened crime, and 14% fewer reports of abuse or neglect. Students with access to the arts in their neighborhoods are 18% more likely to score higher on English and Math exams (Americans for the Arts, n.d.). The arts continue to increase engagement with residents, with a notable increase in volunteer efforts.

Access to the arts varies from instruction to performances, encompassing babies and toddlers, at-risk teens, young adults, and senior citizens. There is no age or time limit for participating in the arts. Various media stem from music to dance, film to painting, playwriting to composing. Community and arts go hand and hand to develop self and group expression. Individuals better themselves and their education by studying the arts, but also contribute to the greater good to produce awareness, change, or something positive. Participants involved in the arts or seeing live performances are more likely to be connected with U.S. history and current events, take Broadway's blockbuster *Hamilton* the musical, or Kaufman's play *The Laramie Project,* for example. Today, visual artists are even using eco-friendly materials and resources to create beautiful art to help save the earth and bring climate change to the forefront (Harrington, 2023). The arts serve as a significant stepping stone in addressing the diversity, equity, and inclusion issues prevalent across the nation. This long-standing recognition of the arts' importance is not new; for example, Former President John F. Kennedy emphasized their value on November 8th, 1963, in his speech at the Washington National Gallery of Art:

> I see little of more importance to the future of our country and our civilization than full recognition of the place of the artist. If art is to nourish the root of our culture, society must set the artist free to follow his vision wherever it takes him. The great artist has always been the voice of the future, of the country, and of the future. His task is not to mirror society, but to change it. (Kennedy, 1963, p. 45)

The Need for Arts Programs

Arts programs and support are needed to bridge the gap between rural America and overpopulated cities, as well as to connect with youth and adults. The lack of programming in certain areas stems from insufficient funds, natural disasters, the availability of performance and rehearsal venues, or geographical isolation. The National Endowment for the Arts (NEA) and the National Assembly of State Arts Agencies (NASAA) research indicates that the following states have poor access to the arts: Mississippi, Alabama, West Virginia, Arkansas, Louisiana, Tennessee, Wyoming, Montana, South Carolina, and North Dakota. Historically, the Southern states have suffered the most from these hardships. In contrast, the states with the most funding, robust programming, strong infrastructure, and active community engagement in the arts, include California, New York, Massachusetts, Washington, Illinois, Texas, Colorado, Oregon, Minnesota, and Hawaii (National Assembly of State Arts Agencies, 2025). The American Academy of Arts and Sciences (2021) states:

> Arts education plays a vital role in the personal and professional development of citizens and, more broadly, the economic growth and social sustainability of communities. Its loss or diminution from the system would be incalculable. And yet, despite widespread support from parents and the general public, arts education still struggles to be prioritized by decision-makers. (p. 10)

The organization frames that the arts continue to build empathy and generate acceptance of others. Mary Ann Carter, the 12th Chairman for the National Endowment for the Arts, backs the notion up: "Arts education exposes students to a greater diversity of opinion and ideas. This in turn can challenge preconceived notions of others and build greater empathy and acceptance" (American Academy of Arts and Sciences, 2021, p. 14).

Beyond funding and access, the arts are also being used as tools for broader social challenges. For example, the United States continue to work toward finding solutions to the current immigration crisis, and the arts have helped new learners of the English language by increasing engagement, confidence in the language, and application (Goldberg, 2019). Students may learn English through acting out scenes, studying a film, drawing or picto-spelling, or composing a song to learn new vocabulary. Additionally, dance and movement have proven effective in learning a second language.

The National Arts and Economic Prosperity 6 study examines the significant impact of the arts on communities and the economy every five years (Americans for the Arts, 2023). The most recent study by the North Carolina Arts Council identified ten reasons why supporting the arts is beneficial. The first three reasons are unifying communities, improving individual well-being, and the arts strengthen the economy as a frontier in economic development. Other findings included that the arts drive tourism and revenue to local businesses, improve academic performance for better educational outcomes, spark innovation, and have a social impact that can address and reflect on social issues. The last two crucial findings highlight that the arts support the emotional health and well-being of our military personnel and engagement with the arts improves overall mental health for everyone (Ricke, n.d.).

COVID-19 had a significant impact on performing arts organizations and artists alike. Performing arts presenters, presenting houses, and festivals experienced a 73% decline in economic activity in 2020 (National Endowment for the Arts, 2022). The new construction of arts and cultural facilities declined by 24% during this time. The unemployment rate for artists in the U.S. was 10%. However, online video streaming was boosted by 14.3% creating more than 12,000 new jobs. Streaming created a community within itself from watch parties with friends, and the generation of new, booming, innovative content. These findings became even more relevant during the COVID-19 pandemic. Despite a sharp decline in performing arts revenues, other areas including transportation, outdoor recreation, and agriculture, performed far worse than the arts.

Post-Pandemic Cravings

Yet, as the nation recovers, one thing has become clear: Americans want art, and they are looking for community. In 2023, one of the most comprehensive studies was the Delaware Arts Alliance poll, which showed that Americans view the arts as essential to their personal lives, communities, and the nation's future. Only 51% believe that their community has equal access to the arts (Delaware Arts Alliance, 2024). The key findings in Americans' perceptions and attitudes were a high engagement in the arts, with 80% of participants attending or watching live arts and cultural events over the past year. Seventy-six percent of participants reported that the arts contribute to their overall joy, well-being, and personal sense of creativity. 72% of participants agreed that the arts unify communities, and believe that the arts provide shared experiences with people of different races, ethnicities, ages, beliefs, and identities. Last, a majority of Americans, 92% of participants. agreed that every student should have access to a quality arts education.

A recent Harvard poll shows that just 17% of Americans under 30 feel they have deep social connections (Harvard Institute of Politics, 2025). Surveying over 2,000 Americans between 18-29 years old, less than half of the participants felt they exhibited a sense of community. The pandemic, now coined the *loneliness epidemic*, blames social media for isolation, an unstable economy, and high housing and education costs. Harvard has conducted Adult Development studies similar to this for nearly 80 years, revealing that long-term happiness is not from wealth, diet, or genetics but from community, revealing that community is the ultimate medicine for the body and the brain (Westway, 2025).

A 2023 poll unveiled that Americans who engage in creative activities at least weekly reported better mental health conditions (American Psychiatric Association, 2023). In a poll, 46% of American participants reported using creative activities to relieve stress or anxiety, with activities such as piano playing, knitting, or dancing. Sixty-five % of participants reported engaging in creative activities in their free time, with 46% also indicating that they used the arts to relieve stress and anxiety. The majority of participants answered that listening to music was their favorite activity for reducing stress or anxiety. The association's President Petros Levounis, M.D., M.A. (American Psychiatric Association, 2023), additionally states the following:

> Creative activities are not just for fun; they can help us take a step back from the daily grind, use our brains differently, and relax. Picking up that paintbrush or solving a tricky puzzle can truly move us to a different mindset. (para. 4).

For five years of the pandemic, the nation has tried to return to a state of normalcy, whether that means performances back in person or music and dance lessons face-to-face. Unfortunately, many organizations could not survive the economic hardships; some theatres have closed indefinitely, and some artists had to find new professions. However, people have learned that some of the initiatives implemented during COVID-19 may represent a healthier, more sustainable new normal.

Effective Implementations

Carrying this lesson forward, there are incredible organizations today whose daily mission is to make a positive impact on their communities through the arts. The goals of these organizations are not driven by corporate greed or status, but rather by solving crime, improving mental health, or breaking language barriers. Here is an overview of a few strong organizations that are working towards creating change and peace in their neighborhoods.

The Queens Theatre

In 2014, the Queens Theatre of New York implemented a senior theatre ensemble for mature adults partnering with local nursing homes (Queens Theatre, 2022). A professional director teaches songs to the seniors and develop original stories based on their background with these vulnerable communities to create a culminating artistic performance free of charge for families and friends. At the start of the Pandemic, like many organizations, the Queens Theatre had to shut down. Theatre organizations struggled with how they would continue their instruction or performances, and many ceased entirely. However, the Queens Theatre quickly adapted to the times and embraced technology, continuing their rehearsals online with Zoom. Conversations and observations with the Queen Theatre at that time surfaced that, while learning new technology requires time and practice for some seniors, others found it just as easy as using FaceTime with their grandchildren. The participants reported overall happiness with these Zoom check-ins or rehearsals, and they were grateful to still have social interaction and to continue making music and theatre online during uncertain times. The theatre continued creating theatre online when it was not possible for individuals or groups to do so in person.

While many people had to reduce their involvement with the arts during COVID due to financial constraints, a lack of resources, or health reasons, they are now learning to live and navigate being part of the arts again, although in a different way. The Pandemic made people realize how important the arts truly are for social reasons and individual happiness. The absence of the arts has a profound impact on society.

Guitars Over Guns

A non-profit organization with a mission to empower the youth through music, mentorship, and the arts. With chapters in Miami, New York, Chicago, and Los Angeles, the organization aims to get students off the streets and away from gun violence. Since 2008, the organization has served over 12,000 young students with a combination of arts education with mentorship from professional musicians to overcome hardship. Students take weekly music instruction that culminates in final performances with their peers. Guitars over Guns promotes building trusting relationships with adults and offers high-quality music lessons at no cost during typically unsupervised hours. In their 2024 Impact Report, the mentees, ages 8–18, identify as 44% African American, 45% Hispanic, with 96% living below the national poverty level. The organization has also assessed that students participating in the program expressed a desire to attend college, and 75% of students showed interest in pursuing a professional music career (Guitars Over Guns, 2024).

Nashville Symphony

In March 2025, the Nashville Symphony introduced the third iteration of *Music in my Neighborhood*, a weeklong community engagement initiative with cultural exchange in the form of a musical takeover with free performances, instructions, and engaging collaborations. While lasting only a week, the event celebrates and strengthens identity in Tennessee. The symphony partners with schools and other local organizations to highlight the region's history, culture, and residents (Nashville Symphony, 2024).

The week of music offers local residents an opportunity to showcase their unique stories through music, highlighting diverse neighborhoods and hosting instrument exploration workshops. The celebrations address people of all ages and provide family-friendly content. While the emphasis is on engaging the youth, the event encourages all residents of the area to attend, whether lifelong Tennesseans or those new to the area, with strong support from the TN Immigrant and Refugee Rights Coalition (HERE Nashville, 2025). The event includes potluck dinners, career talks, drum circles, and free chamber music concerts by the symphony.

Kimberly McLemore, Vice President of Education and Community Engagement at the symphony, states, "Our goal is to highlight the amazing things already happening in Tennessee neighborhoods, and we welcome everyone to join us in celebrating" (Nashville Music City, 2024, n.p.). The symphony aims to showcase the history and culture of its residents by collaborating with local organizations, exploring the origins of historic and cultural roots that date back long before Nashville became known as Music City (McCarthy, 2022).

Comfort Choir

The Comfort Choir of Big Rapids, Michigan, is a new community outreach group of 15 female volunteers singing to people who are chronically ill, socially isolated, or in palliative care. The choir brings the healing power of music to those in need the most (Schwartz, 2025). Founded by Helen Brandt, the choir performs at private homes, hospitals, long-term care facilities, senior living centers, churches, and memorial services, all free of charge. As both a musician and a former oncology nurse, Brandt states, “The choir is not focused on performance, but on bringing the feeling of music and connection to others. Music can create a sense of presence and energy between people” (Schwartz, 2025, para. 4). The group does not have a religious affiliation and sings to people, regardless of their religious background. The choir’s focus is on offering human connection through music. There is not one path or discipline within the arts to bring community together. Different communities may not fit into the same mold. The examples of these various organizations demonstrate effective and creative solutions to current issues in communities, or identified gaps. Not every community experiences the same issues or needs. However, different cities may be able to learn from each other about what initiatives have worked effectively in a particular region. Together, these examples show growing collaborations between leaders, artists, and volunteers to create change and foster healthy social interactions in local communities.

Conclusion

Community-building naturally raises the broader question why community is so important. Stein (2023) states that a community can help people feel connected to something larger than themselves. It is vital for the psychological well-being, those who have experienced trauma or loss. There are numerous ways to connect with a community, whether through a club with shared values, a spiritual organization, or by building relationships with neighbors through volunteering at local events.

Human relationships flourish through strong communities. The U.S. is not by any means perfect, and developing strong communities will be the backbone of making systemic change. The arts have shown they are an integral piece of the solution, a piece to the puzzle, to lessening crime and isolation, to developing purpose and healthy interactions with one another. The arts are helping Americans thrive, coming out of a pandemic, from youth at risk to aging adults. People of all backgrounds, disciplines, cultures, and learning styles can benefit from the arts in their community. Leaders should embrace using the arts as a tool to combat low morale in communities and establish thriving neighborhoods. In a world of uncertainty and fear, the arts remain an inclusive and holistic approach. A focus on the arts and community-building is key to making the U.S. a strong nation once again.

References

American Academy of Arts and Sciences. (2021). *Art for life's sake: The case for arts education*. https://www.amacad.org/publication/case-for-arts-education

Americans for the Arts. (2023). *Arts & economic prosperity 6 (AEP6): The economic & social impact study of nonprofit arts and culture organizations and their audiences*. https://aep6.americansforthearts.org/

Americans for the Arts. (n.d.). *The impact of the arts in our communities*. https://ww2.americansforthearts.org/fact-sheet/impact-arts-our-communities

American Psychiatric Association. (2023, July 6). *New APA poll: Americans who engage in creative activities at least weekly report better mental health*. https://www.psychiatry.org/news-room/news-releases/new-apa-poll-americans-who-engage-in-creative-acti

The Community Roundtable. (n.d.). *What is a community?* https://communityroundtable.com/community-101/what-is-community/

Delaware Arts Alliance. (2024, December 5). *Americans speak out about the arts in 2023*. https://www.delawareartsalliance.org/americans-speak-out-abuot-the-arts-in-2023/

Goldberg, M. (2019, October 8). *Using the arts to support English language learners*. The Trump Kennedy Center. https://www.kennedy-center.org/education/resources-for-educators/classroom-resources/articles-and-how-tos/articles/educators/ell--special-education/using-the-arts-to-support-english-language-learners/

Guitars Over Guns. (2024). *Impact report 2024*. https://www.guitarsoverguns.org/wp-content/uploads/2024/12/Impact-Deck-2024-Final.pdf

Harrington, S. (2023, January 2). *8 artists who are grappling with climate change and imagining a better world*. Yale Climate Connections. https://yaleclimateconnections.org/2023/01/8-artists-who-are-grappling-with-climate-change-and-imagining-a-better-world/

Harvard Institute of Politics. (2025, April 23). *Harvard youth poll.* https://iop.harvard.edu/youth-poll/50th-edition-spring-2025#key-takeaway--id--1958

HERE Nashville. (2025, February 20). *Nashville Symphony brings 'music in my neighborhood' to Antioch*. https://www.herenashville.com/nashville-symphony-music-in-my-neighborhood/

Kennedy, J. F. (1963, October 26). *Remarks at Amherst College, Amherst, Massachusetts, October 26, 1963*. The John F. Kennedy Presidential Library. https://www.jfklibrary.org/archives/other-resources/john-f-kennedy-speeches/amherst-college-19631026

Manning, S., & Uygur, Y. (2023). Transforming local communities through artistic leadership. *Stanford Social Innovation Review*. https://doi.org/10.48558/7W8K-0N31

McCarthy, D. (2022, September 18). *Symphony's 'music in my neighborhood' bops about Edgehill for a week of celebration.* News Channel 5. https://www.newschannel5.com/news/symphonys-music-in-my-neighborhood-bops-about-edgehill-for-a-week-of-celebration

Nashville Music City. (2024, February 2). *Nashville Symphony brings back "music in my neighborhood" community initiative*. https://www.visitmusiccity.com/media/press-release/2024/nashville-symphony-brings-back-music-my-neighborhood-community-initiative

Nashville Symphony. (2024, February 10). *Nashville Symphony announces "music in my neighborhood."* https://www.nashvillesymphony.org/media/press-room/press-releases/news-releases/2025-press-releases/nashville-symphony-announces-music-in-my-neighborhood-community-initiative-in-support-of-the-antioch-community

National Assembly of State Arts Agencies. (2025). *FY2025 state arts agency revenues report*. https://nasaa-arts.org/nasaa_research/fy2025-state-arts-agency-revenues-report-2/

National Endowment for the Arts. (2022, March 15). *New data show the economic impact of COVID-19 on the arts & culture sector*. https://www.arts.gov/news/press-releases/2022/new-data-show-economic-impact-covid-19-arts-culture-sector

Queens Theatre. (2022, July 28). *CBS mornings – Queens Theatre senior ensemble* [Video]. YouTube. https://www.youtube.com/watch?v=UkP0NxGe7Bc

Ricke, G. (n.d.). *Americans for the Arts reveals 10 reasons the arts are necessary in our hometowns*. Arts for Everybody. https://www.artsforeverybody.org/blog/seniors-drawn-to-art-by-health-benefits-6eajr-hnmaz

Ruben, M. A., Stosic, M. D., Correale, J., & Blanch-Hartigan, D. (2021). Is technology enhancing or hindering interpersonal communication? A framework and preliminary results to examine the relationship between technology use and nonverbal decoding skill. *Frontiers in Psychology*, *11*, Article 611670. https://doi.org/10.3389/fpsyg.2020.611670

Schwartz, D. (2025, April 30). *Comfort choir specializes in the healing power of music*. Big Rapids News. https://www.bigrapidsnews.com/news/article/comfort-choir-big-rapids-michigan-offers-healing-20298415.php

Stein, S. (2023, July 18). *The importance of community*. Psychology Today. https://www.psychologytoday.com/us/blog/what-the-wild-things-are/202307/the-importance-of-community

Westway, C. T. (2025, May 2). *Harvard study reveals truth about community*. https://westwayct.org.uk/harvard-study-reveals-truth-about-community/

Discussion Questions

1. How have the arts made an impact in your community?

2. What communities could benefit from more arts programs?

3. What additional arts efforts could be implemented in your community?

4. How do you see yourself contributing to your community?

5. What does community mean to you?

About the Author

Elizabeth A. Turner, Ed.D., is director of performing arts at Georgetown Visitation Preparatory School in Washington, D.C. In this capacity, she has been spearheading faith-based performing arts offerings for young women at the pre-collegiate level. ORCID 0009-0003-1638-7086.

To Cite this Article

Turner, E. A. (2025, Fall). Building community through the arts. *Journal of Multidisciplinary Research, 17*(2), 85–93.

“Arco Ballena National Park, Costa Rica”
Costa Rica
2023

Photography by Nassim Harosh.

Journal of Multidisciplinary Research, Vol. 17, No. 2), Fall 2025, 95–102.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Life Forward

Crisis Care: Managing Health Systems in the Line of Fire: A Conversation with Eli Levi

Eli Levi
Deputy Director General
Government Hospitals Unit
Israel Ministry of Health

Background

Eli Levi is the Deputy Director General for the Government Hospitals Unit in the Israeli Ministry of Health. He is responsible for overseeing the management of Israel's 24 government-owned hospitals.

Introductory Note by Ya'akov M. Bayer

Associate Editor
Journal of Multidisciplinary Research

The following background note helps international readers better understand the structure of Israel's healthcare system and the institutional context of this interview.

Israel's public health system relies on a model of universal coverage; the state regulates it, and a mix of public and semi-public providers primarily deliver care. One of four non-profit health maintenance organizations (HMOs) insures all residents by law, while a diverse array of institutions delivers hospital services: government-owned hospitals, HMO-owned hospitals, non-profit voluntary hospitals, and a small number of private facilities.

The Government Hospital Division operates nearly half of the country's acute care beds, the majority of psychiatric beds, and specialized geriatric centers. This division is unique in that it functions both as an internal service provider and as an instrument of national health policy. It oversees the management, budgeting, strategic planning, and operational coordination of 24 hospitals that the state owns, including general, psychiatric, and long-term care institutions. The Ministry of Health, meanwhile, serves a dual role as both regulator of the entire health system and owner-operator of this network of government hospitals. This structure creates both strategic opportunities and inherent tensions.

This interview took place in the aftermath of one of the most severe crises in Israel's modern history. On October 7, 2023, Hamas terrorists launched a surprise cross-border attack from Gaza, killing more than 1,200 civilians and soldiers and triggering a full-scale war. This unprecedented assault marked the deadliest day for the Jewish people since the Holocaust, and Israel initiated Operation Swords of Iron, its comprehensive military campaign against Hamas and other hostile actors in the region. In the weeks that followed, the healthcare system was forced to operate under sustained missile fire, with large portions of the workforce mobilized for reserve duty, and thousands of civilians displaced. Hospitals had to maintain functionality under emergency conditions, absorbing both mass casualty events and widespread mental health trauma.

Later, as part of the broader strategic arc of the conflict, Israel launched Operation *Am Ke'Lavi* ("A Nation Rising Like a Lion"), a 12-day operation focused on degrading Iran's nuclear infrastructure and deterring regional escalation. These events placed Israel's public hospitals in the crosshairs of both physical and systemic strain, making them a central axis of national resilience.

What does a national health system look like from the inside when a country is under missile attack? How do public hospitals maintain quality of care, financial stability, and continuity of operations while grappling with staff shortages, security threats, and regional disparities?

In this interview, Mr. Levy provides a rare behind-the-scenes perspective on how Israel's public hospitals confronted these questions during one of the most intense periods in the nation's recent history. He reflects on the unique challenges of managing a hospital network that must simultaneously serve civilian needs and maintain strategic readiness under fire. Drawing on lessons from previous crises, most notably the COVID-19 pandemic, he describes how institutional flexibility, infrastructure investments, and emergency protocols enabled rapid adaptation. His insights also shed light on deeper systemic issues, such as the tension between regulation and service provision, the absence of genuine market competition, and the widening gap between urban centers and peripheral areas. Altogether, this conversation offers a compelling view into the realities of public health governance under extreme conditions.

Interview
by Ya'akov M. Bayer
Associate Editor
Journal of Multidisciplinary Research

1. Let's start with your role. What does your position as Deputy Director General for the Government Hospital Division entail?

I'm responsible for overseeing the economic and operational management of Israel's 24 government-owned hospitals. These include 11 general acute-care hospitals, 8 psychiatric institutions, and 4 long-term geriatric care facilities. While its own executive and clinical team leads each hospital, our division provides strategic, financial, and regulatory coordination at the national level. We act both as a central planning authority and as an enabling force, ensuring consistency across the network while also supporting local adaptability.

My work is first and foremost economic. We're responsible for allocating the government health budget across hospitals, planning and approving annual operational work plans, managing centralized procurement processes, and designing long-term strategies for financial sustainability. Every year, we negotiate with the Ministry of Finance to secure baseline funding, as well as targeted programmatic budgets, for example, in areas such as emergency preparedness, energy efficiency, maternal health, or digital transformation.

A key part of my role is maintaining efficiency. We continuously analyze hospital operations and look for ways to optimize expenditures, whether that's through shared services between hospitals, leveraging economies of scale in purchasing, or reallocating staff and equipment to meet regional demands. But beyond efficiency, we are also responsible for equity: making sure that hospitals in Israel's geographic or socio-economic periphery get the support they need to deliver care comparable to those in wealthier or more central regions.

We also play a vital role in network-level stability. That means identifying early signs of budgetary strain or operational bottlenecks and working with hospital leadership to adjust course before problems escalate. For example, if a psychiatric facility is under pressure due to rising admissions or staffing shortages, we may coordinate with a nearby general hospital to share infrastructure or support additional recruitment resources from the center. This kind of regional and inter-institutional cooperation is central to how we maintain system balance.

On a more day-to-day level, we handle ongoing logistical challenges, like breakdowns in essential equipment, disruptions with key vendors, or infrastructure issues. These issues, though operational, often have major financial implications, and we must resolve them quickly to ensure continuity of care.

Importantly, we also serve as a bridge between regulation and execution. Israel's public health system is highly centralized and subject to extensive regulation. Hospitals do not set their prices, cannot freely determine which services to open, and must comply with national policy directives on service delivery and infrastructure development. Our role is to interpret those top-down regulations in ways that are operationally feasible and fiscally responsible at the institutional level.

The guiding principle across all our work is maximizing public value, that is, ensuring that every shekel we invest delivers the highest possible return in terms of health outcomes, accessibility, and quality. Our division exists to safeguard the economic and functional integrity of the public hospital system, not just in ordinary times but also under the extreme pressures that sometimes define our reality.

2. How independent is your division from the Ministry of Health itself?

That is the heart of the structural tension. Although our division is nominally distinct from the Ministry's regulatory branches, we still operate under the authority of the Director General of the Ministry of Health. That means we are subject to internal policy directives, budgetary ceilings, and strategic constraints that originate from the same body that regulates us. For example, when a government hospital runs a deficit, which can happen due to unfunded mandates or policy reforms, it is ultimately the Ministry that must cover that shortfall. So, we are constantly balancing loyalty to the Ministry with the need to advocate for hospitals on the ground, sometimes even pushing back against the very policies our institution promotes.

3. One of the major reforms in recent years was the "Open Choice" policy. Can you explain what that is and how it affects government hospitals?

Certainly. The Israeli Ministry of Health introduced the "Open Choice" policy as a national regulatory reform to enhance patient autonomy. Under this reform, the law entitles every citizen – whom one of the country's four public health maintenance organizations (HMOs) insures, which all operate under Israel's mandatory universal insurance law – to choose the hospital from which they wish to receive elective or specialist services. In theory, this means that geographic restrictions should no longer dictate where providers can refer a patient, and each person should have equal access to the full spectrum of public and non-governmental hospital providers, regardless of where they live or which HMO insures them. On the surface, this sounds like a victory for transparency, efficiency, and consumer choice. But in reality, most patients do not make an active selection. The vast majority either do not know they have the right to choose or lack the time, knowledge, or confidence to navigate the bureaucratic process the system requires to exercise it. As a result, HMOs continue to effectively control the referral system, and they do so in a way that often serves their financial interests.

This creates what I call engineered patient flows. HMOs that own hospitals or maintain more favorable contractual terms with certain institutions have a strong incentive to steer patients toward those facilities, sometimes through subtle design, sometimes through overt policy. Conversely, they may divert patients away from hospitals that are financially or structurally less aligned with their goals, often government hospitals, thereby creating a cycle of over-concentration in some places and underutilization in others.

But the deeper issue is structural: This policy, aimed at expanding competition and access, is a regulatory creation of the Ministry of Health itself, the same Ministry that owns and operates the network of government hospitals. In other words, the Ministry has implemented a reform that directly disadvantages its institutions by empowering external payers to reallocate patients at will, with little oversight or balancing mechanism.

This is a paradigmatic example of the conflict of interest embedded in Israel's health system. The Ministry acts as both regulator and provider. As a regulator, it promotes competition; as a provider, it suffers from the consequences of those very reforms. The result is a persistent internal tension that undermines the financial stability of public hospitals and complicates their ability to plan services, invest in infrastructure, or retain staff. We live with this contradiction every day.

4. So, you do not see the current environment as fostering genuine competition?

Not at all. Real competition requires equal footing, transparency, access, and financial neutrality. But in Israel, several HMOs own their hospitals and naturally prioritize them. Only two of the four major HMOs have signed comprehensive agreements with us, ensuring full regional access. The largest HMO has not, and this results in the national infrastructure being used inefficiently. In the periphery, the impact is especially damaging: Hospitals lose patients, staff morale drops, and financial deficits grow – all due to policy decisions they cannot control.

This is one of the fundamental paradoxes of healthcare economics: Competition in theory does not always translate to equity in practice. Unlike in standard markets, patients often do not act like free consumers. They rarely have perfect information, institutional gatekeepers shape their choices, and they have limited ability to switch providers. In such a system, selective contracting by powerful HMOs can distort patient flows and resource allocation, not to maximize efficiency, but to strengthen negotiation leverage. In the public sector, this becomes even more problematic when the state itself owns hospitals yet designs regulatory structures that leave them at a disadvantage. That's not just a policy flaw, it's a systemic contradiction.

5. Given these structural inequities, how do you try to respond?

We try every available avenue. When a hospital is struggling to attract referrals from HMOs, we explore options like negotiating central agreements or building alliances with larger, more established hospitals. In some cases, we have to make difficult decisions, scaling back services, consolidating departments, or adjusting staffing levels to align with budget realities. Our ultimate goal is to preserve clinical quality while avoiding systemic collapse. But it's a tightrope walk between policy, finance, and care.

6. Let's shift to October 7, 2023, the day of the large-scale terrorist attack. How did the hospital system respond?

When the war broke out, we were able to respond rapidly and decisively, largely thanks to the operational and organizational lessons we had learned during the COVID-19 pandemic. One of the most critical insights from that experience was the importance of fast, decentralized decision-making in times of national emergency. On October 7, the Ministry issued top-level guidance, but left operational discretion to hospital administrators, allowing them to act immediately based on their local context.

Many hospitals activated fortified underground areas, including parking garages that had been upgraded during COVID, as protected emergency wards. Others repurposed large internal spaces like auditoriums or conference halls for pediatric care or triage. The principle was clear: In wartime, you do not wait for budgetary approval; you act to save lives. This approach enabled continuity of care, even under missile attacks.

7. You mentioned earlier that some of the solutions were the result of actions taken in the context of COVID. Could you elaborate on how these operational lessons enabled this rapid transformation on October 7?

Absolutely, and not just in abstract terms. One of the most concrete legacies of COVID-19 was the transformation of hospital infrastructure to meet emergency conditions. During the pandemic, the crisis forced hospitals across the country to rapidly adapt non-clinical areas, especially underground parking structures, basements, and logistical zones, into functional treatment wards. They upgraded these areas with improved air filtration, emergency power supply, and reinforced structural protections to comply with civil defense standards.

This investment in infrastructure proved critical during the war. Rambam Hospital in Haifa [a general hospital in northern Israel, one of the regions that missiles struck during the war], for example, used the COVID period to develop its massive underground garage into a fully fortified emergency hospital. When hostilities began, Rambam chose to keep most services running, using that protected space for continuity of care. Similarly, hospitals like Nahariya and Shamir [two general hospitals in northern Israel] also benefited from infrastructure adaptations that they made during the pandemic, which allowed them to maintain operations in secure, surge-ready environments.

But the benefits extended beyond physical spaces. We also carried forward emergency staffing frameworks, special wage arrangements, and agile administrative protocols that we had designed during COVID. These allowed local leadership to act quickly and maintain flexibility under pressure. In many ways, the COVID crisis forced us to prepare for scenarios we had not anticipated, and that preparation became the backbone of our wartime resilience.

8. What about staffing challenges during the war?

Staffing quickly emerged as one of the most complex and sensitive issues we faced. Within days of the outbreak of hostilities, hundreds of healthcare workers, physicians, nurses, technicians, and administrative personnel were called up for reserve military duty under Israel's national emergency mobilization protocols. This caused an immediate and broad staffing shortage across the entire public hospital network, affecting clinical care, support functions, and managerial continuity alike. Simultaneously, patient volume declined dramatically. Hospitals suspended outpatient clinics, delayed elective procedures, and even emergency room visits decreased due to missile attacks, transportation restrictions, and widespread anxiety among the civilian population. While this temporary reduction in demand offered some relief, it also led to service fragmentation and disruptions in non-urgent care.

Our response was to rebalance operations internally. Hospital directors redeployed staff between departments, merged units where necessary, and focused resources on critical areas. During those first weeks, we were not operating under a logic of fiscal restraint. Our top priorities were preserving human life, safeguarding our personnel, and ensuring the basic functionality of the system under emergency conditions.

At the same time, we began proactively engaging with the Ministry of Finance and other government bodies to signal emerging systemic needs, not just for equipment or overtime, but for support mechanisms that would allow staff to continue functioning in wartime conditions. When rockets are falling, and schools are closed, many healthcare professionals, especially those with caregiving responsibilities, cannot physically get to work or stay for extended shifts unless a supporting structure is in place. Emergency childcare is just one example. Staff also needed transportation solutions, protected workspaces, and mental health support, all of which required targeted funding.

This was particularly evident during Operation *Am K'Lavi* (the war with Iran, expanding the post-October 7th conflict), when public hospitals were operating under continuous missile threat while managing a depleted workforce. We made it clear to policymakers: If hospitals are to remain operational under fire, the system must invest not only in infrastructure and supplies but also in the conditions that enable people to show up and do their jobs.

9. How did you maintain morale and cohesion within your division during the crisis?

Most of my staff worked remotely. However, I ensured that we maintained a sense of unity. Every day, I sent them situational updates: what decisions were made, what the challenges were, and what tomorrow would bring. We always stationed at least one team member in the national command center. Whether they had direct tasks or not, I wanted them to feel involved, like they were part of the mission. Emotional anchoring is especially essential when the situation involves people.

10. Let's talk about physical infrastructure. How prepared was Israel's hospital network in terms of protective facilities?

Remarkably so, largely thanks to investments made during COVID. To my knowledge, no other country has such a dense concentration of fortified public healthcare infrastructure. That said, there's still a major gap in some facilities, many of which remain exposed. Those sectors require urgent attention.

11. Were there any surprising collaborations or innovations during the conflict?

Yes. We partnered with private nursing institutions to relocate vulnerable patients from unprotected public facilities. We also initiated cross-system transfers to ensure that every patient had access to a secure environment. These collaborations, often informal, sometimes improvised, reflect the ingenuity and solidarity of the Israeli health system when it counts most. And for me, that's one of the proudest outcomes of this war effort.

12. Thank you very much for your time. This has been a truly insightful conversation.

Thank you. It was a pleasure, and I found it genuinely interesting as well. I appreciate the thoughtful questions.

*The interview took place on July 2, 2025.

To Cite this Interview

Bayer, Y. M. (2025, Fall). Life forward: Crisis care: Managing health systems in the line of fire: A conversation with Mr. Eli Levi, Deputy Director General, Government Hospitals Unit, Israel Ministry of Health. *Journal of Multidisciplinary Research, 17*(2), 95–102.

Journal of Multidisciplinary Research, Vol. 17, No. 2, Fall 2025, 103–104.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Book Review

Book Details

Opresnik, M. O., Hollensen, S., & Kotler, P. (2025). *PIVOTAL strategy: The infinity marketing canvas and framework: The success formula to turn purpose into infinite market power and leave competition behind.* Opresnik Management Consulting, 341 pages, ISBN-13: 9798294980580.

Reviewer

Professor Gopalakrishnan Iyer

Synopsis and Evaluation

PIVOTAL Strategy is the NextGen Business Model Canvas for an algorithmic, AI-driven world. It provides a one-page blueprint—the PIVOTAL Infinity Marketing Canvas®—that helps leaders design compelling value propositions, build capability-backed differentiation, and activate purpose-driven strategy in execution. In an era in which AI compresses time-to-imitation, platforms reshape demand in real time, and attention becomes a scarce currency, the book delivers what many organisations urgently need: strategic coherence that is not only intellectually robust but also operationally executable.

The framework's strength lies in its disciplined integration and sequencing. Purpose and Vision are not treated as introductory rhetoric; they become the strategic anchor that governs subsequent choices. From there, the book advances through market and customer understanding, competitive context, solution design, measurable value logic, and outreach/activation—culminating in explicit transfer into implementation. This progression mirrors how senior leaders must work today: synthesising complexity into clear priorities, making trade-offs visible, and creating decision-ready outputs. The Canvas does not merely "summarise" strategy; it structures the strategic thinking process so that teams can align quickly and move decisively.

A defining advantage of the PIVOTAL Infinity Marketing Canvas® is that it turns strategy from a static document into a shared decision system. Many organisations do not fail because they lack ideas; they fail because priorities remain fragmented across functions. The Canvas establishes a common language across marketing, product, sales, finance, and operations—reducing internal friction and accelerating coordinated action. In this way, PIVOTAL Strategy is highly relevant for leadership teams seeking not only better analysis but better alignment, faster decisions, and measurable execution.

From a strategic management perspective, the book resonates strongly with the resource-based logic associated with Barney. In competitive environments—especially those accelerated by AI—sustainable performance is built less by chasing every market signal and more by mobilising distinctive capabilities that are valuable, difficult to imitate, and organisationally embedded.

PIVOTAL Strategy reinforces this discipline by guiding leaders to identify the organisation's strategic strengths and convert them into innovation and value propositions that can be activated consistently in the market. When algorithms amplify the speed of imitation, capability-backed coherence becomes the most defensible form of differentiation.

The book also elevates Purpose-driven Leadership beyond slogans. Purpose is presented as a governing logic that must shape innovation priorities, value creation, and outreach decisions. This matters because many organisations have purpose statements that remain disconnected from choices. PIVOTAL Strategy operationalises purpose by linking it to what the organisation will build, how it will create measurable value, and how it will deliver and communicate that value credibly. The result is purpose as strategy—not purpose as messaging.

The structure is particularly well suited to executive education and leadership development. The framework is facilitation-friendly and works naturally in focused sprints: Participants can complete an integrated strategic narrative that is teachable and immediately applicable. The Canvas can function as a stand-alone executive workshop, be embedded as a module within MBA or diploma pathways, or serve as a recurring leadership ritual for strategic refresh and alignment. Importantly, it respects complexity while still producing clarity—an essential quality for modern management education.

Overall, PIVOTAL Strategy stands out as an executive-ready playbook with conceptual grounding and real-world usability. It reframes modern marketing strategy as purpose-led leadership translated into capability-backed innovation, measurable value creation, and market activation—condensed into one page and designed for implementation. For leaders and institutions seeking a modern strategy canvas that moves seamlessly from boardroom to classroom to execution, this book is a timely and highly actionable contribution.

In the Author's Own Words

> To bridge the gap between strategy and execution, this book also presents the PIVOTAL Infinity Marketing Canvas® – a hands-on framework that helps businesses apply the PIVOTAL model in a structured and visual way… PIVOTAL Strategy is not just about marketing strategy – it's about building organizations that matter. (p. 4)

Reviewer's Details

Professor Gopalakrishnan Iyer (profagiyer@gmail.com), is a South Asia–based technomist and strategic management expert with 36 years' experience across international business and marketing, renewable energy (HIRE), infrastructure, defence, marine, media, and publishing. A Distinguished Fellow, Institute of Directors (India), he is a prolific author and biographer, pioneering "RENEWability beyond SUSTAINability." ORCID 0009-0004-3481-7235.

To Cite this Review

Iyer, G. (2025, Fall). Review of *PIVOTAL strategy: The infinity marketing canvas and framework: The success formula to turn purpose into infinite market power and leave competition behind*, by M. O. Opresnik, S. Hollensen, & & P. Kotler. *Journal of Multidisciplinary Research, 17*(2), 103–104.

Journal of Multidisciplinary Research, Vol. 17, No. 2, Fall 2025, 105–106.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Book Review

Book Details

Smith, R. C. (2025). *Has medicine lost its mind? Why our mental health system is failing us and what should be done to cure it.* Prometheus Books, 187 pages, $29, hardcover, ISBN-13: 9781493087655.

Reviewer

Rajil M. Karnani, M.D., M.M.E., M.S.P.A., F.A.C.P.

Synopsis and Evaluation

I had the pleasure of reading Dr. Robert C. Smith's latest book, *Has Medicine Lost Its Mind?* It is about the current mental health care crisis in our country. As a practicing primary care physician, this book struck a chord with me. It starts by laying out unnerving statistics on how extensive mental health problems are and how undersupplied mental health care is in the United States. The author then followed this by three poignant patient cases he experienced early in his career that illustrate the limitations of his ability to care for mental health problems. These cases are quite relatable, and most readers will easily identify with the personal anguish the author feels.

This despair leads into the next chapter, which is the most captivating. Here, the author makes a brilliant case in identifying the various root causes of our mental health crisis, specifically focusing on the role of medical education in shaping learners' attitudes toward mental health. The result, as one would guess, is a dearth of graduates entering psychiatry, and a primary care workforce that is woefully unprepared in picking up the slack. Once again, Dr. Smith expertly uses three more real patient cases to bring the points home at a relatable level. After reading this, it is hard not to get upset.

In the third chapter, the author describes the consequences of the crisis that we feel at ground level as health care practitioners. This includes the misuse of opioids, the increase in suicides, and the rampant increase in depression and anxiety. What I found most compelling in the entire book is how Dr. Smith described the intersection between psychosocial factors and physical disease by citing three chronic disease scenarios in which psychosocial factors play an undeniable role in the care of the patient. Given that eight out of the top ten causes of death in the United States today are due to chronic diseases, it is likely that we as a healthcare system could prevent close to half of these cases "by changing the patient's psychosocially based lifestyle habits" (p. 43). This could save an estimated $1–2 trillion per year in healthcare costs. For those who work on the payer or policy side in healthcare, this should garner much attention.

For the next three chapters, Dr. Smith discusses the process of how we got here. This is a valuable resource for those that want a deeper understanding of the paradigms medicine has used to heal patients. He talks at length about the mind-body split, a point where “medicine discarded its patient’s psychological and social dimensions in favor of an isolated focus on their physical diseases” (p. 47).

He then takes the reader through a journey through history, from the 16th century through early 20th century, to show how this split occurred. He ends this section by discussing a modern, 21st century “systems view” that integrates the mind and body into the biopsychosocial model. From this, a valuable patient-centered interview technique emerges, the “NURS” mnemonic (**N**ame-**U**nderstand-**R**espect-**S**upport), that allows the physician to effectively demonstrate empathy (p.83). I use this technique in my practice today, and I am astounded how well it works. I encourage the reader to learn this technique.

In the final section, Dr. Smith turns toward the future. He first addresses the barriers to change. These include the stigma associated with psychiatric disease and the medical-industrial complex. He then declares a call to action on how we in medicine can fix this crisis. The plan Dr. Smith lays out is simple and brilliant; a modern-day “Flexner” report that seeks to determine how well today’s medical schools address the new paradigm of science, the “systems view.”

This book is a brisk read and can easily be completed in a weekend or on a plane ride for the life of a busy health care practitioner. It is clear, hard hitting, organized, logical, and above all, motivating. For those that are faced with the challenge of seeing the overflow of mental health problems like me, this book is well worth your time. You’ll see the mental health crisis through a new lens, and you won’t look back!

In the Author’s Own Words

> “It has long been recognized that there is an extreme shortage of mental health care professionals in the United States. This has led to the stunning fact that most treatment of mental health problems is conducted by primary care and other medical physicians who are not trained to diagnose and treat mental disorders. Yet those in charge of health care planning continue to omit this training in the medical schools and residencies that prepare physicians for clinical practice. The result: substandard care for most with mental illnesses…” (p. 14).

Reviewer’s Details

Rajil M. Karnani, M.D., M.M.E., M.S.P.A., F.A.C.P. (rajil.karnani@osumc.edu) is an Associate Professor - Clinical with the Department of Internal Medicine at The Ohio State University College of Medicine. He is a practicing academic general internist in Columbus, Ohio. His areas of expertise include medical education, evidence-based medicine, and healthcare artificial intelligence.

To Cite This Review

Karnani, R. M. (2025, Fall). Review of *Has medicine lost its mind? Why our mental health system is failing us and what should be done to cure it,* by R. C. Smith. *Journal of Multidisciplinary Research, 17*(2), 105–106.

Journal of Multidisciplinary Research, Vol. 17, No. 2, Fall 2025, 107–110.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Book Review

Book Details

Weingarden, L. S. (2025). *A neuroarthistory of the painters of modern life: Embodying Baudelairean modernity*. Routledge, ePub, ISBN-13: 9780429808708.

Reviewer

Veronika Szendrő, D.L.A., independent researcher

Synopsis and Evaluation

Lauren S. Weingarden's multidisciplinary work combines research from art history, literary criticism, and neurology to illuminate how the interweaving of nineteenth-century French science and culture shaped the artistic media of the period. The book argues that Baudelaire's poetry created a new visual language that both influenced and interacted with leading French painters, photographers, and architects of the era, who employed similar technical and formal strategies in their work. These include fragmentation, interruption, sensory overload, and the visual mediation of moral duality. Through neurological analysis, the book suggests that French modern art generated perceptual challenges different from those of earlier representational forms.

In the first two chapters, Weingarten outlines the background to the transformation of nineteenth-century Parisian architecture and artistic thinking: Georges-Eugène Haussmann's comprehensive architectural vision affecting the entirety of Paris, the implementation of which plunged the city into a state of upheaval and chaotic yet vibrant urban life. Within this context, she analyzes Baudelaire's poetry, which the swirling dynamism of Paris shaped just as much as it, in turn, influenced the city's artistic milieu—among others, the works of Degas, Manet, Guys, and Méryon. According to Weingarten, Baudelaire employs irony in his poems as a means of expressing and resolving this atmosphere of disturbance. In the development of the theoretical background of his poetry, Baudelaire's dialogues with the psychologist Jean-Jacques Moreau played an important role. Weingarten emphasizes that, through Baudelaire's engagement with Moreau's neurological writings, the poet may have developed the idea of a dualism between internal and external stimuli, which he frequently explores in his poems through a self-doubling model. This thread lays the groundwork for the book's incorporation of a neurological perspective into the interpretation of nineteenth-century artistic transformations, which the author examines in greater detail in later chapters.

In the third chapter, Weingarten interprets the impact of Baudelaire's artistic devices with negative valence on the viewer through a neurological model. She highlights the importance of *discrepancy,* which, in her view, marks a new direction in neuroaesthetics by overriding the study of the neural experience underlying the classical sense of beauty based on a self-rewarding mechanism. She draws on the theory of Pelowski and Akiba (Weingarten, 2025), according to which artistic discrepancy can prompt a schema shift in a viewer confronted with aesthetics that deviate from the norm, potentially eliciting inward self-awareness. This process simultaneously directs thought to a metacognitive level and activates both the sympathetic and parasympathetic nervous systems, resulting in a latency period during which the viewer experiences pleasure. Weingarten (2025) presents an experiment by Brown and colleagues, which examined the brain's response to artworks with positive valence and found that the orbitofrontal cortex (OFC) is most active during aesthetic evaluation. This brain region is also responsible for post-object recognition evaluation and maintains recursive connections with the anterior insula, which contains a meta-representation of bodily responses from inputs. Weingarten links this process to the act of self-reflection. On this basis, she concludes that Baudelaire's frequently employed negative-valence artistic elements can elicit pleasure by triggering self-reflection in the viewer. Consequently, she infers that artworks exhibiting artistic discrepancy may possess aesthetic significance comparable to that of positive-valence works, which have traditionally been central to neuroaesthetic research focused on the brain's self-reward mechanisms.

In the fourth and fifth chapters, the book analyzes Charles Marville's photographic works created in areas of Paris undergoing demolition, within the context of Baudelaire's perspective and the social impact of the *Haussmannization*. The author demonstrates how Marville moves beyond the documentary function of photography to convey emotions through the use of backlighting, tonal contrasts, and atmospheric perspective. Weingarten then presents her own research, in which she examines the mnemonic effects of the analyzed photographs using participants' evaluative ratings. She finds that her results support the emotional and haptic impact of Marville's artistic components on viewers.

In the sixth chapter, Manet's scandalously erotic paintings of his time are linked to the pictorial expression of Baudelairean artistic strategies. The author highlights the divisive social reception of nude photography and painting during the period. She connects the pictorial manifestation of Baudelairean artistic approach to the irony of Manet's provocative nudes, created as reinterpretations of classical paintings. Weingarten does not limit herself to presenting the social context of nineteenth-century painting. In the seventh chapter, she emphasizes that nineteenth-century critics' embodied responses to Manet's *Le Déjeuner sur L'herbe* and *Olympia* can be understood through a neurobiological model in which overlapping brain regions process both erotic and disgust-inducing stimuli, mediating the attraction–repulsion spectrum, while higher-order cognitive appraisal and language translate these visceral responses into social judgments of obscenity.

In the eighth chapter, the book returns to the analysis of Baudelaire's poetry, focusing primarily on his prose poems. The author demonstrates how the poet engages with literary conventions, first by referencing them and then by consciously breaking and distorting them. In the ninth chapter, Weingarten expands upon her previous analysis of how Baudelaire's technique influenced the work of Manet, with whom the poet maintained an intellectual collaboration. Finally, she presents the relationship between Zola and Manet, and the interactions between their works, in relation to the convergence of realism and self-reflection.

In the tenth chapter, Weingarten substantiates her argument that specific visual elements in Manet's *A Bar at the Folies-Bergère* function as a liminal space through an eye-tracking experiment. Her aim is to demonstrate that the mirror in the painting influences the viewer's cognitive experience of defamiliarization. The central hypothesis of Weingarten's study is that participants' dynamic eye movements while observing Manet's painting reflect an attempt to resolve the spatial uncertainty depicted in the image. She explains that these features of the painting influence viewers' disruption of conventional representational and social expectations.

The strength of the book lies in its engaging synthesis of nineteenth-century French art, illuminating its social and cultural dimensions from a multidisciplinary perspective. The author complements this by presenting the neuroaesthetic aspects of the artistic means of expression under examination.

A limitation of the book is that the author overlooks neuroaesthetic results that challenge her hypothesis based on neurological research. Brown and colleagues serve as the basis for her neurological model, referring to the activation of the OFC and anterior insula both in response to positive and negative valence judgments of visual stimuli and during post-object recognition evaluation—processes that Brown and colleagues regard as the "core circuit of aesthetic processing" (as cited in Weingarten, 2025, p. 74). Building on this theory, Weingarten links self-reflection to the anterior insula. However, more recent neuroaesthetic research suggests that aesthetic experience is not confined to a single valence-evaluating system but emerges from the coordinated activity of multiple brain networks, with internally generated cognitive processes that artworks activating the DMN induce (Chatterjee & Vartanian, 2016). Nevertheless, Weingarten's intention to incorporate self-reflection within the aesthetic experience, understood as a self-rewarding mechanism, is particularly important.

By presenting case studies, the author introduces readers to the multidisciplinary field of *neuroarthistory* and demonstrates how the neurological mechanisms of the human brain can explain art-historical phenomena. The book also serves as a strong example of interdisciplinary collaboration between experimental psychologists and scholars in the theoretical and practical fields of art and allowing neuroaesthetic questions to be addressed from a more complex perspective. Accordingly, Weingarten's work contributes not only to the fields of neuroaesthetics, art history, and literary criticism, but it also may be of interest to any reader seeking a comprehensive, multidisciplinary perspective on the revolutionary changes in nineteenth-century French culture, which had a profound impact on the development of Western art as a whole.

In the Author's Own Words

> "(…) a Neuroarthistory of The Painters of Modern Life contributes to the interdisciplinary humanities and the field of neuroaesthetics and, thereby, can provide a model for collaborations between humanities and science. (…) I believe my resolutions and my collaborators' suggestions for further research offer lessons for future transdisciplinary collaborations. That is, rather than understanding these disciplinary gaps as moments of impossibility, they can and did yield further collaboration and creativity." (Weingarten, 2025, p. 252)

Reference

Chatterjee, A., & Vartanian, O. (2016). Neuroscience of aesthetics. *Annals of the New York Academy of Sciences, 1369*(1), 172–194.

Reviewer's Details

Dr. Veronika Szendrő (veronika.szendro@gmail.com) holds a DLA (Doctor of Liberal Arts) in Visual Arts from the University of Pécs, Hungary, and during her doctoral research spent a semester at Yale University Divinity School as a visiting scholar. She has formal training in both artistic practice and art history. Her research focuses on the contemplative elements of Buddhist mandala art, for which she conducted EEG measurements in collaboration with a Czech interdisciplinary research group. She is also interested in the emerging multidisciplinary field *neurotheology* and aims to identify specific visual patterns, using methods from neuroscience, that may contribute to spiritual immersion, or meditative states, or both. ORCID 0000-0003-1315-5741.

To Cite this Review

Szendrő, V. (2025, Fall). Review of *A neuroarthistory of the painters of modern life: Embodying Baudelairean modernity,* by L. S. Weingarden. *Journal of Multidisciplinary Research, 17*(2), 107–110.

Journal of Multidisciplinary Research, Vol. 17, No. 2, Fall 2025, 111–113.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Journal of Multidisciplinary Research

Index to Volume 17 (2025)

Compiled by Raúl Fernández-Calienes

By Author

By Title

To Cite this Index

Fernández-Calienes, R. (2025, Fall). Journal of Multidisciplinary Research: Index to Volume 17 (2025). *Journal of Multidisciplinary Research, 17*(2), 111–113.

About the Journal

Advertising

For information on advertising in the *Journal of Multidisciplinary Research,* please contact the Editor-in-Chief (hgringarten@stu.edu).

Archiving

The *Journal of Multidisciplinary Research* is archived in print form in the St. Thomas University Library and in electronic form on the journal website (http://www.jmrpublication.org); back issues are available at that website. In the event the journal ceases publication, access to journal content will remain viable through both the Library and the website.

Artificial Intelligence

The *Journal of Multidisciplinary Research* requires that authors include a statement with their submission explaining their use of any artificial intelligence (AI) in their work, including, but not limited to, research, outlining, drafting, citations, references, figures, images, tables, formatting, grammar checking, and spell checking. Authors are fully, and solely, responsible and accountable for the accuracy, originality, and integrity of all their submitted and published content.

Disclaimer

The *Journal of Multidisciplinary Research* publisher, editor-in-chief, managing editor, associate editors, reviews editors, student editors, and the members of the editorial advisory and editorial review committees (hereafter "JMR-related personnel") are not responsible for errors, or for any consequences arising from the use of information contained in the *Journal of Multidisciplinary Research*; authors are fully, and solely, responsible and accountable for any errors, any plagiarism, any use of copyrighted material, and any use of artificial intelligence (AI) in their work; the views and opinions authors express do not necessarily reflect those of JMR-related personnel; neither does the publication of advertisements constitute any endorsement by of the products advertised.

Indexing and Listing

The *Journal of Multidisciplinary Research* is indexed in ProQuest, Cabells, EBSCO, Gale-Cengage Learning, Business History Conference Collective Bibliography (BHC), CiteFactor, Mendeley, Ulrich's, de Gruyter (Germany), Elektronische Zeitschriftenbibliothek (EZB) (Germany), and European Reference Index for the Humanities and the Social Sciences (ERIH PLUS) (Norway); and Directory of Open Access Resources (ROAD). It is listed in the AcademicKeys, Cabells Journalytics, Cision Directory, EconPapers, Εθνικός Συλλογικός Κατάλογος Επιστημονικών Περιοδικών (Greece), Gaudeamus, Google Scholar, Isis Current Bibliography, JournalSearches, JournalSeek, Journals4Free, The Linguist List, MediaFinder, Microsoft Academic, NewJour, Research Papers in Economics (RePEc), Semantic Scholar, ACNP (Italy), BVB-Bibilotheks Verbund Bayern FAST-Zugang (Germany), CIRC (Spain), COPAC (England), CORE (UK), CUFTS Journal Database (Canada), EconBiz (Germany), Edanz (Japan), Globethics (Switzerland), HEC Paris Journal Finder (France), JUFO (Finland), The Lens (Australia), Library Hub Discoverer (UK), MIAR (Spain), Mir@bel (France), National Library of New Zealand, Norwegian Register for Scientific Journals, Series, and Publishers (Norway), NSD – Norwegian Register (Norway), PhilPapers (Canada), REBIUN-CRUE (Spain), ROAD: Directory of Open Access Scholarly Resources (France), SUDOC (France), ZeitschriftenDatenBank (ZDB) (Germany), and the Open University of Hong Kong Electronic Library (Hong Kong). It is accessible via BASE-Bielefeld Academic Search Engine (Germany).

License Statement and Copyright

Open Access Statement

The *Journal of Multidisciplinary Research* is an Open Access publication. It does *not* charge readers or their institutions for access. Our users have the right to read, download, copy, print, search, or link to the full texts of its contents.

Peer Review Process

The *Journal of Multidisciplinary Research* abides by a double-blind peer review process such that the journal does not disclose the identity of the reviewer(s) to the author(s) and does not disclose the identity of the author(s) to the reviewer(s).

Permissions and Reprints

For information on permissions and reprints in relation to the *Journal of Multidisciplinary Research,* please contact the Editor-in-Chief (hgringarten@stu.edu).

Privacy Statement

The *Journal of Multidisciplinary Research* uses the names and e-mail addresses it enters into this journal exclusively for the stated purposes of this journal and will not make these available for any other purpose or to any other party.

Publication Frequency

The *Journal of Multidisciplinary Research* is published two times per year.

Retractions and Withdrawals

The *Journal of Multidisciplinary Research* reserves the right to amend, correct, retract, withdraw, or any combination of these, any article, review, or other submission at any time.

Sponsorship

The *Journal of Multidisciplinary Research* publisher and sponsor is St. Thomas University.

Submissions Policies

The *Journal of Multidisciplinary Research* accepts electronic submissions.

The *Journal of Multidisciplinary Research* does not require Article Processing Charges (APCs) or Article Submission Charges (ASCs).

The Journal of Multidisciplinary Research takes measures to screen for plagiarism and use of artificial intelligence, including use of software such as TurnItIn.

Journal of Multidisciplinary Research content requires the following: (√) Attribution, (√) No Commercial Usage, and (√) No Derivatives.

The Journal of Multidisciplinary Research license statement is available here.

To Cite Articles

To cite from the *Journal of Multidisciplinary Research,* you may use this example:

Dunn, M. W., Dastoor, B., & Sims, R. L. (2012, Spring). Transformational leadership and organizational commitment: A cross-cultural perspective. *Journal of Multidisciplinary Research, 4*(1), 45–59.

Submissions

Author Guidelines

The *Journal of Multidisciplinary Research* (JMR) seeks to publish authors who strive to produce original, insightful, interesting, important, and theoretically solid research. Demonstration of a significant "value-added" contribution to a field's understanding of an issue or topic is crucial to acceptance for publication.

All articles submitted to the JMR must be accessible to a wide-ranging readership. Authors should write manuscripts as simply and concisely as possible, without sacrificing meaningfulness or clarity of exposition.

Manuscripts should be no more than 26, double-spaced pages (justified, one-inch margins, half-inch indentations, in Times New Roman 12-point font, *using active voice*), including an abstract (up to 200 words), keywords (up to seven terms), references (with DOI numbers), discussion questions (three to five), and relevant tables and figures (in their correct position in the text, not separate and not at the end of the manuscript), and appendixes (at the end of the manuscript). At his or her own discretion, the JMR editor-in-chief may allow additional space to papers that make very extensive contributions or that require additional space for data presentation or references.

Submission Preparation Checklist

When an author submits his or her manuscript to the *Journal of Multidisciplinary Research* for publication consideration, he or she agrees to abide by JMR publication requirements. Specifically, an author must:

- Agree that his or her manuscript is not under review for publication elsewhere and that he or she will not submit it to another publication during the review period at the JMR.
- Attest that the manuscript reports empirical results that have not been published previously. An author, whose manuscript utilizes data reported in any other manuscript, published or not, must inform the editors of these reports at the time of submission.
- Confirm he or she has not submitted the manuscript previously to the JMR for review. He or she may submit a manuscript that previously was released in conference proceedings, but the editors may view this manuscript less favorably.
- Agree that, during the review process, he or she will take down all other versions of submitted manuscripts (e.g., working papers, prior drafts, final drafts) posted on any Web site (e.g., personal, departmental, institutional, university, archival, working series).
- Include a statement disclosing their use of any artificial intelligence (AI) in their work.
- Agree that his or her submission supports the core values of St. Thomas University (http://www.stu.edu).
- Adhere to the seventh edition of the *Publication Manual of the American Psychological Association* (APA, 7th edition). At the initial stage, the editors tend to review less favorably those manuscripts that do not conform to APA and may return them to the primary author for revision prior to submission to the full review process.
- Submit the manuscript in a Microsoft Word file from which the author has removed the title page, his or her name, and all author-identifying references and metadata.
- Submit the manuscript via e-mail to the JMR Editor-in-Chief (at hgringarten@stu.edu).
- Be willing to review submissions to the *Journal of Multidisciplinary Research* by other authors if the JMR Editor-in-Chief calls upon him or her to do so.

JMR

Journal of Multidisciplinary Research

http://www.jmrpublication.org

Editorial Review Board

JMR
Journal of Multidisciplinary Research
http://www.jmrpublication.org