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RESP

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Leveraging AI for Sustainable Development: A Scoping Review on Social Work's Contribution to the SDGs

Sürdürülebilir Kalkınma İçin Yapay Zekadan Yararlanmak: Sosyal Hizmetin Sürdürülebilir Kalkınma Amaçlarına Katkısı Üzerine Kapsamlı Bir İnceleme

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ANAHTAR KELİMELER

Sürdürülebilir Kalkınma Amaçları
Yapay Zeka
Sosyal Hizmet
Sosyal Fayda

ÖZ

Yapay zeka (YZ) ile sosyal hizmetin kesişim noktası, özellikle Sürdürülebilir Kalkınma Amaçları (SKA'lar) doğrultusunda sosyal faydanın artırılmasına yönelik önemli olanaklar sunmaktadır. Bu derleme çalışması, YZ'nin sosyal hizmet alanındaki uygulamalarını ve SKA'lara olan katkılarını ele alan mevcut literatürü kapsamlı bir şekilde incelemeyi amaçlamaktadır. Literatür taraması, birden fazla veri tabanında yürütülen sistematik bir araştırma yoluyla gerçekleştirilmiş olup çocuk refahı, ruh sağlığı ve toplum geliştirme gibi YZ'nin uygulama alanlarını vurgulamaktadır. Çalışma, bu uygulamaların sağladığı faydaları, karşılaşılan zorlukları ve ilgili etik meseleleri detaylı bir şekilde tartışmaktadır. Elde edilen bulgular, YZ'nin SKA'lara ulaşmadaki potansiyelini daha etkin bir şekilde değerlendirebilmek için sosyal hizmet profesyonelleri ile YZ uzmanları arasında disiplinlerarası iş birliğinin ve daha fazla araştırmanın gerekliliğine dikkat çekmektedir.

KEYWORDS

Sustainable Development Goals
Artificial Intelligence
Social Work
Social Good

ABSTRACT

The intersection of artificial intelligence (AI) and social work presents significant opportunities for advancing social good, particularly in alignment with the Sustainable Development Goals (SDGs). This scoping review aims to map the existing literature on the application of AI in social work and its contributions to the SDGs. Conducting a comprehensive search across multiple databases to identify studies that explore the use of AI in various social work practices, the findings highlight key areas where AI has been utilized, including child welfare, mental health, and community development, and discuss the benefits, challenges, and ethical considerations associated with these applications. This review underscores the need for further research and collaboration between social work professionals and AI experts to harness AI's potential for achieving the SDGs.

1. Introduction

The United Nations' Sustainable Development Goals (SDGs) represent a global agenda to achieve a better and more sustainable future for all by 2030 (United Nations, 2015). Social work plays a crucial role in achieving the United Nations' Sustainable Development Goals (SDGs), a set of 17 global goals aimed at ending poverty, protecting the planet, and ensuring prosperity for all by 2030 (Smith, 2013). Social support activities carried out by public, private and other actors providing social support services should be permanent and sustainable (Abay and Abay Çelik, 2023). Social workers are at the forefront of efforts to address social determinants of health, advocate for human rights, and promote social justice—core elements that align with the SDGs.

Artificial Intelligence (AI) has increasingly become a transformative force across various sectors, including healthcare, education, and social services. In the field of social work, AI has the potential to revolutionize practice

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and enhance service delivery by providing innovative tools for data analysis, client management, and decision-making (Cariceo et al., 2018). AI technologies, such as machine learning algorithms, natural language processing, and predictive analytics, can assist social workers in identifying at-risk individuals, personalizing interventions, and optimizing resource allocation. These applications hold significant promise for improving outcomes in various areas of social work, including child welfare, mental health, elder care, and community development. The importance of AI in social work lies in its potential to enhance service delivery, improve client outcomes, and address complex social issues through data-driven approaches (Gillingham, 2019).

Despite the growing interest in AI, its integration into social work practice remains at an early stage. There are concerns about ethical implications, such as data privacy, algorithmic bias, and the potential reduction of human interaction in a profession traditionally centered on empathy and personal relationships (Fernando and Ranasinghe, 2023). These concerns necessitate a careful examination of how AI can be ethically and effectively integrated into social work to ensure that it aligns with the core values of the profession, such as social justice, human dignity, and respect for diversity.

Given the transformative potential of AI and the critical role of social work in achieving the SDGs, there is a need for a comprehensive scoping review to explore the intersection of these fields. Such a review would map existing research, identify gaps, and highlight best practices for leveraging AI to enhance social work's contributions to the SDGs. By understanding the current state of AI applications in social work, stakeholders can better harness these technologies for social good, ensuring that the profession remains at the forefront of efforts to create a more just and equitable world. This scoping review aims to map the current landscape of AI applications in social work and explore their contributions to the SDGs.

2. Methodology

Scoping reviews provide valuable insights into a concept's nature and its literature over time, helping decision-makers shape research agendas, advance the field, and identify areas for future systematic reviews or evidence synthesis (Peters, et al, 2020). Thus, scoping review methodology was employed to identify and analyze studies on the use of AI in social work that contribute to SDGs. We searched multiple databases, including Google Scholar, Scopus, Web of Science, Dergipark and TRDizin, using a combination of keywords related to AI, social work, and the SDGs in both English and Turkish articles. Studies were screened for relevance based on predefined inclusion and exclusion criteria.

To ensure that the review is focused and relevant, the following inclusion and exclusion criteria has been applied:

2.1. Inclusion Criteria

Relevance to AI and Social Work: Studies must focus on the application of AI technologies for social good or in social work practice, education, or research.

Contribution to SDGs: Studies must discuss how AI applications in social work related areas can contribute to one or more of the SDGs especially to 1 (No Poverty), 3 (Good Health and Well-being) and 16 (Peace, Justice, and Strong Institutions).

Study Types: Empirical studies, including quantitative, qualitative, and mixed-methods research, and systematic reviews and meta-analyses.

Publication Type: Peer-reviewed journal articles, conference proceedings, book chapters and reports from reputable organizations.

2.2. Exclusion Criteria

Lack of Focus on AI or Social Work: Studies that do not explicitly address AI applications in social work or their impact on the SDGs.

Non-Empirical Studies: Editorials, and commentaries.

Duplicate Publications: Duplicate studies from different databases have been removed, with the most recent and comprehensive version retained.

Non-English and Non-Turkish Language Publications: Studies not published in English or Turkish has been excluded.

Records have been screened via Rayyan, a web-based tool to expedite the initial screening of the abstracts and titles using a process of semi-automation (Ouzzani et al., 2016). Data extraction has been conducted using a standardized form to ensure consistency and accuracy. The following key information has been extracted from each included study. Study Identification: Author(s), year of publication, and country of study. Study Design: Type of study (e.g., quantitative, qualitative, mixed-methods, systematic review), methodology, and data collection methods. AI Technology: Description of the AI technology used (e.g., machine learning, natural language processing), purpose, and application in social work. SDG Addressed: Specific SDG(s) addressed by the study and how the AI application contributes to these goals. Contribution to SDGs: How the study contributed to SDGs. Key Findings: Key findings related to the impact of AI in social work and its contribution to the SDGs. Challenges: Identified ethical, technical, and practical challenges of using AI in social work. Conclusions and Suggestions: Conclusions drawn by the study and any suggestions for future research or practice.

3. Results

The PRISMA flow diagram based on this scoping review is as follows:

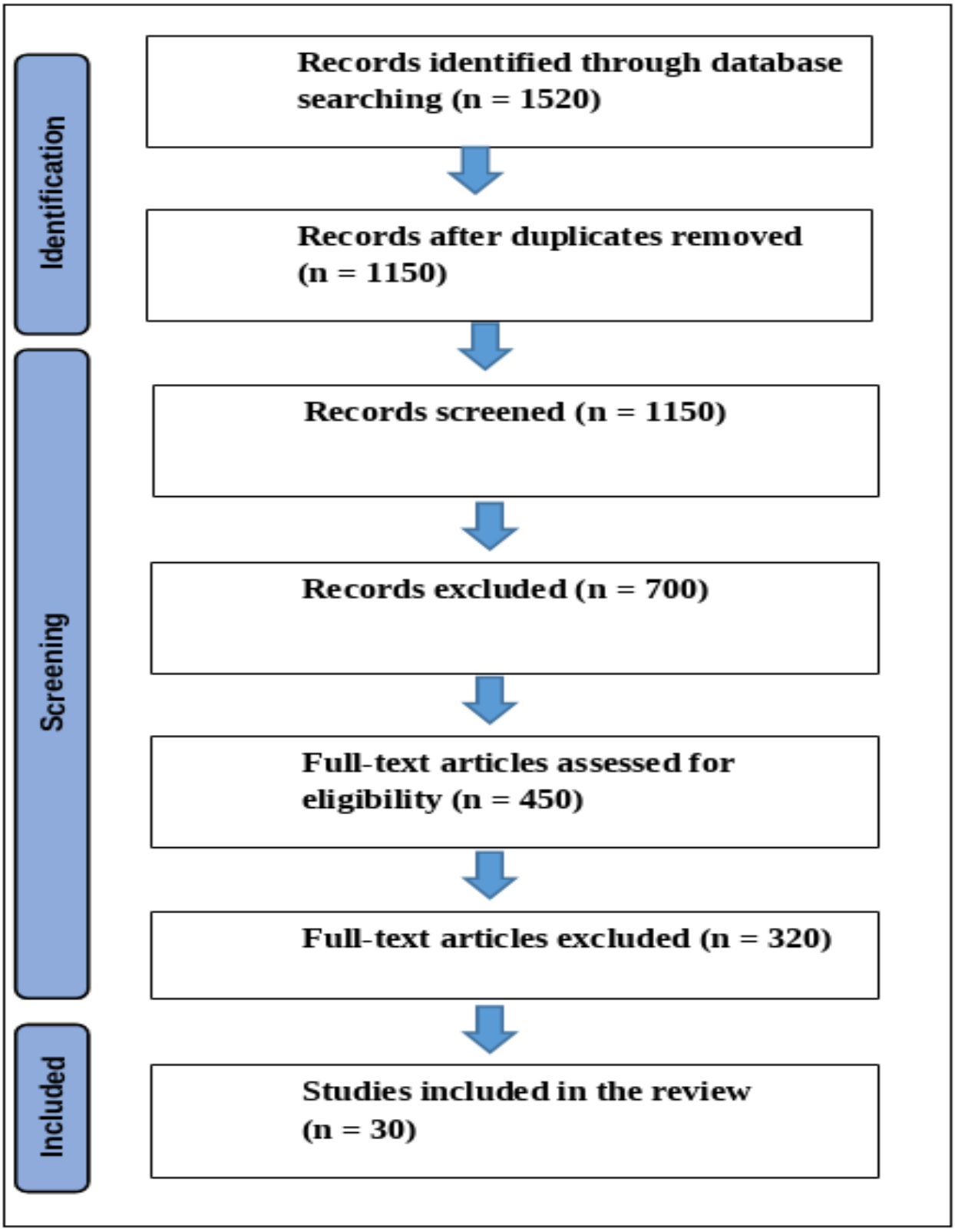
Identification
Screening
Included
Records identified through database searching (n = 1520)
Records after duplicates removed (n = 1150)
Records screened (n = 1150)
Records excluded (n = 700)
Full-text articles assessed for eligibility (n = 450)
Full-text articles excluded (n = 320)
Studies included in the review (n = 30)

Figure 1. The PRISMA flowchart of the study

Table 1, Table 2, Table 3, Table 4, Table 5 and Table 6 provide a comprehensive overview of the 30 studies included in the scoping review, highlighting their key characteristics, applications, and contributions to the SDGs.

Table 1. Overview of Included Studies: The Studies 1 to 5

Category	Study 1	Study 2	Study 3	Study 4	Study 5
Author(s), Year	Kawakami, A., et al. (2022)	Patton, D. U., et al. (2016)	Goralski, M. A. and Tan, T.K. (2022)	Özen, H. (2021)	Ngũnjiri, A., et al. (2023)
Title	Improving Human-AI Partnerships in Child Welfare: Understanding Worker Practices, Challenges, and Desires for Algorithmic Decision Support	Using Natural Language Processing and Qualitative Analysis to Intervene in Gang Violence: A Collaboration Between Social Work Researchers and Data Scientists	Artificial intelligence and poverty alleviation: Emerging innovations and their implications for management education and sustainable development	Evaluation of Digital Health Services in Terms of Sustainable Development Goals	Utilizing User Preferences in Designing the AGILE (Accelerating Access to Gender-Based Violence Information and Services Leveraging on Technology Enhanced) Chatbot
Journal	CHI Conference on Human Factors in Computing Systems (CHI '22)	Bloomberg Data for Good Exchange Conference	The International Journal of Management Education	OPUS International Journal of Society Researches	International Journal of Environmental Research and Public Health
Country	United States	United States	United States	Turkiye	Kenya
Study Design	Qualitative	Qualitative	Theoretical and Qualitative	Theoretical and Qualitative	Exploratory Qualitative Study
Methodology	Contextual inquiries and semi-structured interviews	Digital Urban Violence Analysis Approach (DUVAA), a collaborative qualitative analysis method combining grounded theory with natural language processing (NLP)	Review and analysis of AI applications in agriculture, integrating political economy analysis and business management strategy to assess their impact on poverty alleviation	Qualitative analysis of existing literature and digital health services in Turkey, with a focus on their alignment with the Sustainable Development Goals.	The study involved focus group discussions (FGDs) with 150 participants, including adolescents, young women, young men, and sexual and gender minorities, to gather insights on user preferences for the AGILE chatbot. The data were analyzed using thematic analysis grounded in theory.
Data Collection Methods	Observations of call screeners and supervisors during their work, semi-structured post-interviews with workers	Analysis of approximately 800 tweets from known gang-involved youth in Chicago; Human annotation of tweets by interdisciplinary team, including youth from violent neighborhoods, social work researchers, and	Literature review and analysis of existing AI applications in agriculture, focusing on innovations like FarmView, robot bees, and CRISPR technology	Review of secondary sources, including academic literature, reports, and existing digital health initiatives.	Focus Group Discussions (FGDs), Desk Review of LVCT Health one2one™ digital platform, Prototype Simulation Exercise, Engagement Questionnaire for AGILE Chatbot

		data scientists.			
AI Technology	Algorithmic Decision Support (ADS) tool called the Allegheny Family Screening Tool (AFST)	Natural Language Processing (NLP)	Machine Learning, Robotics (Robot Bees), Gene Editing (CRISPR)	Telemedicine, mobile health applications, and artificial intelligence in the context of digital health.	AGILE Chatbot designed to provide GBV-related information and advocate for health-seeking behavior change among users.
Purpose	To understand how social workers at a child welfare agency integrate AI-assisted decision support tools (AFST) into their decision-making processes and to identify design opportunities for more effective human-AI partnerships in child welfare.	To develop a suite of NLP tools to decode the high-stress language of urban, gang-involved youth on social media and predict clusters of aggressive language that may escalate into real-world violence.	To explore how AI innovations, particularly in agriculture, can contribute to poverty alleviation and sustainable development, and to examine their implications for management education.	To examine the impact and contribution of telemedicine and mobile health services, that are also spreading in Turkey, on sustainable development goals.	To understand user preferences, expectations, acceptability, and motivation for using the AGILE chatbot and to apply these insights in developing a human-centered design for the chatbot.
Application in Social Work	AI-assisted decision-making in child welfare, specifically for child maltreatment screening and risk assessment in a child welfare agency	Violence prevention and intervention by analyzing social media communications to detect and predict potential gang-related violence	AI applications in agriculture to alleviate poverty by enhancing agricultural productivity, supporting sustainable food systems, and reducing inequality	The study is focused on the broader field of public health and how digital health services can support social well-being.	The chatbot is intended to offer support and information related to gender-based violence (GBV) for vulnerable populations, including adolescents, young women, and young men, which aligns with the objectives of social work in providing resources.
SDGs Addressed	SDG 3 (Good Health and Well-being), SDG 16 (Peace, Justice, and Strong Institutions)	SDG 16 (Peace, Justice, and Strong Institutions)	SDG 1 (No Poverty), SDG 2 (Zero Hunger), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action)	SDG 3 (Good Health and Well-being), SDG 10 (Reduced Inequalities), SDG 13 (Climate Action)	SDG 3 (Good Health and Well-being), SDG 5 (Gender Equality), SDG 10 (Reduced Inequalities)
Contribution to SDGs	Enhances decision-making accuracy and consistency in child welfare, potentially reducing biases and improving outcomes for children.	Provides tools for early detection and intervention in violent behavior, contributing to the reduction of gang violence and promotion of safer communities.	Enhances food security, promotes sustainable agriculture, and supports economic growth by improving agricultural productivity and resilience to climate change	The study suggests that digital health services directly contribute to SDG 3 by improving access to healthcare and indirectly to SDG 10 by reducing inequalities in healthcare access. Additionally, it discusses the potential environmental benefits of digital	The AGILE chatbot aims to improve access to GBV services and information, contributing to better health and well-being (SDG 3), promoting gender equality (SDG 5), and reducing inequalities in access to critical services (SDG 10).

				health services, contributing to SDG 13.	
Key Findings	Social Workers rely on both AI recommendations and their contextual knowledge to make decisions. There is tension between AI recommendations and social workers' own judgment, indicating a need for better integration and design of AI tools.	The study developed an NLP tool that could classify tweets into categories of aggression, grief, or other. It highlighted the complexity of gang-related communication on social media and the need for combining qualitative insights with machine learning for effective violence intervention tools.	AI technologies such as FarmView, robot bees, and CRISPR can significantly impact poverty alleviation by increasing food production, enhancing sustainable agricultural practices, and improving access to nutrition and economic opportunities for the poor.	Digital health services can significantly improve healthcare access and efficiency. Telemedicine and mobile health applications are particularly effective in overcoming geographical and temporal barriers to healthcare. The study concludes that these technologies have direct implications for SDG 3 and indirect implications for SDGs 10 and 13.	The study identified 14 salient themes related to GBV and sexual and reproductive health. Users expressed a preference for chatbots that offer privacy, and accurate information. The AGILE chatbot could potentially address barriers to healthcare access for vulnerable groups by providing discreet, non-judgmental, and accessible services.
Challenges	Ethical concerns about data privacy and bias, lack of transparency in the AI tool's decision-making process, and organizational pressures that influence social workers' reliance on AI recommendations.	The diverse and complex nature of language used by gang-involved youth, including non-standard English and specific cultural references, poses challenges for NLP. Ethical concerns about the use of social media data and the privacy of individuals involved.	Ethical concerns regarding gene editing, technological access disparities, potential ecological impacts, and the need for inclusive policies that ensure benefits reach marginalized communities.	Challenges include digital inequalities, the need for legal frameworks to support telemedicine, and the integration of these services into existing healthcare systems.	Challenges included the need for accurate and reliable information, ensuring confidentiality, addressing technological barriers (e.g., access to digital devices and internet), and integrating the chatbot with human support services.
Conclusions and Suggestions	The study suggests the need for more training for social workers on AI tools, enhanced transparency of AI models, and the development of ethical guidelines for AI use in social work. It also highlights opportunities for improving human-AI partnerships.	There is a need for continued development of AI tools that integrate both qualitative and quantitative data to better understand and predict gang violence. Future work should focus on refining NLP models and expanding datasets to improve the accuracy and applicability of the tools in various social contexts.	The study concludes that AI has significant potential to support poverty alleviation through sustainable agriculture. It suggests more interdisciplinary collaboration, inclusive policy-making, and integration of AI ethics into education and practice.	The study concludes that while digital health services offer significant potential, there is a need for more inclusive access and supportive policies to fully realize their benefits. The author suggests that these services should be expanded and integrated more widely into public health strategies to maximize their contribution to the SDGs.	The study concluded that a human-centered approach is essential for the design and effectiveness of digital health interventions like the AGILE chatbot. It suggests incorporating features such as emotional awareness, multilingual support, and integration with human services to enhance user engagement and service delivery.

Table 2. Overview of Included Studies: The Studies 6 to 10

Category	Study 6	Study 7	Study 8	Study 9	Study 10
Author(s), Year	Mackenzie Hall, S. (2023)	Lehtiniemi, T. (2024)	Yurttabir, H. H. (2023)	Tuğaç, Ç. (2023)	Tulğan, B. and Pak Güre, M. (2024)
Title	Accelerating AI in an Unequal World – What Should We Do?	Contextual Social Valences for Artificial Intelligence: Anticipation that Matters in Social Work	Integrating Artificial Intelligence into Social Work Education: Opportunities and Challenges	The Role of Artificial Intelligence Applications in the Realization of the United Nations Sustainable Development Goals	In the Echoes of Tomorrow: The Intersection of Social Work and Artificial Intelligence Through the Eyes of Turkish Students
Journal	The Graduate Inequality Review	Information, Communication & Society	The International Conference on Social Work & Social Research	Journal of Turkish Court of Accounts	Journal of Social Service Research
Country	England	Finland	Turkiye	Turkiye	Turkiye
Study Design	Qualitative	Qualitative study based on interviews	Qualitative	Qualitative	Qualitative
Methodology	Analysis of existing literature and case studies on AI's impact on inequality	Analysis of pilot trials in Finnish child welfare services using an AI tool for risk prediction	Review of existing literature and expert opinions on AI integration into social work education	Qualitative analysis focusing on the impacts of AI on SDGs	Qualitative analysis of Focus Group Sessions
Data Collection Methods	Review of secondary sources such as research papers and reports	Semi-structured interviews with caseworkers and professionals involved in the pilot trials	Compilation and analysis of secondary data sources such as articles and reports	Literature review and analysis of existing AI applications relevant to SDGs.	Socio - demographic information form and a semi-structured interview form
AI Technology	General AI technologies, including ChatGPT, facial recognition, automated recruitment pipelines, and cars without drivers.	AI tool for predicting severe risks in child welfare (e.g., emergency placement or custody).	General AI technologies, with a focus on big data analysis, predictive and automatic decision-making, and AI language models (e.g., ChatGPT).	Various AI applications, particularly those used in decision-making and policy development.	AI applications in social work
Purpose	To discuss the accelerating use of AI in the world and the inequalities it introduces, especially for marginalized groups.	To explore the expectations and value of AI in social work, specifically how AI can support or hinder professional knowledge-making processes.	To examine the potential, opportunities, and challenges of integrating AI into social work education, and to encourage reflection on future directions and applications.	To evaluate how AI applications can support the realization of the SDGs, while also addressing the potential risks and ethical considerations involved.	To examine the views of social work students on the impact of AI on social work.
Application in Social Work	AI impacts areas like recruitment, healthcare and surveillance, affecting social work by influencing fairness in service distribution and decision-making.	The AI tool was used in child welfare services to predict risks and support early intervention efforts.	The study discusses how AI can be used in social work education to prepare professionals for dealing with complex social issues, enhance decision-making,	The study discusses the transformative role of AI in various sectors, including social work, highlighting its potential to improve decision-making processes and service	Development of client-centered systems; Risk analysis; Evidence-based practices; Alternative interventions

			and support social good.	delivery.	
SDGs Addressed	SDG 10 (Reduced Inequalities)	SDG 10 (Reduced Inequalities)	SDG 4 (Quality Education) SDG 10 (Reduced Inequalities)	SDG 3 (Good Health and Well-being) SDG 4 (Quality Education) SDG 6 (Clean Water and Sanitation) SDG 8 (Decent Work and Economic Growth) SDG 10 (Reduced Inequalities) SDG 11 (Sustainable Cities) SDG 12 (Responsible Consumption) SDG 13 (Climate Action) SDG 17 (Partnerships for the Goals)	SDG 10 (Reduced Inequalities)
Contribution to SDGs	The article highlights how AI's unfair outcomes exacerbate inequality, especially for marginalized groups, making it relevant to reducing inequalities.	The study discusses how AI tools, if properly contextualized, can help reduce inequalities by improving decision-making processes in sensitive areas like child welfare.	The paper highlights how AI can contribute to social good by addressing social injustices, poverty, and discrimination, and emphasizes the importance of preparing social work professionals to use AI ethically and effectively.	AI is positioned as a powerful tool that can enhance the effectiveness and efficiency of achieving SDGs by providing actionable insights and fostering inclusive access to technology.	Using AI in social work provides time and resource savings.
Key Findings	AI systems often reflect societal biases; Fairness in AI is context-dependent, and current methods of debiasing AI are insufficient.	Caseworkers expect AI to support, not replace, their professional judgment by providing contextually relevant information; AI's predictions should be seen as tools to facilitate client interactions rather than as definitive outcomes; The use of AI in social work must consider the specific context and needs of the field, emphasizing the importance of human expertise.	AI has the potential to improve social work education by offering new tools for understanding and addressing social issues; The integration of AI into social work education must consider ethical issues, such as maintaining human-centric approaches and avoiding mechanical interactions; Interdisciplinary collaboration is essential to ensure AI is used ethically and equitably in social work.	AI can transform various sectors, but its implementation must consider ethical, legal, and social implications; Vulnerabilities, such as increased inequalities, must be addressed to harness AI's full potential for SDGs.	Perceived opportunities for AI in social work include time and resource savings, reducing bureaucratic tasks, and enhancing evidence-based practices; Challenges include concerns about emotional understanding, privacy, unemployment, and ethical issues.
Challenges	AI's black-box nature makes it difficult to enforce reliability; Addressing bias is complex due to	AI tools can miscategorize clients and provide irrelevant or excessive information,	Ethical concerns related to AI in social work, such as biases and the potential for exacerbating	The study identifies challenges including ethical dilemmas, potential biases in AI systems, and the	Inadequacy in understanding emotions and empathy; Privacy and confidentiality concerns; Increased

	static datasets, entrenched societal injustices, and a lack of flexibility in AI systems.	leading to potential ethical and professional issues; The reliance on historical data can lead to biased predictions that fail to account for individual client circumstances and changes over time.	inequalities; The need to adapt existing educational programs to incorporate AI technology effectively; Balancing the use of AI with the need for human interaction and empathy in social work practice.	need for equitable access to technology across different regions and societal segments.	unemployment; Deepened inequalities; Potential misuse of data; Ethical violations
Conclusions and Suggestions	Diverse voices, especially those from marginalized communities, must be included in AI development;A flexible, complex approach is required to address AI biases rather than relying on standardized metrics .	AI should be designed to support human knowledge-making processes, rather than replace them. Contextual AI valences should be considered to ensure that AI tools are effective and relevant in social work contexts. There is a need for careful contextualization and scaling down of AI-related expectations to align with the realities of social work.	The integration of AI into social work education presents both opportunities and challenges; careful consideration is required to ensure AI is used to enhance, rather than replace, human judgment. Educational programs must evolve to equip future social workers with the knowledge and skills to use AI responsibly. Further research and collaboration are needed to explore the full potential of AI in social work and to address the challenges it presents.	The study concludes that AI has a significant role in achieving the SDGs but stresses the importance of ethical frameworks and inclusive approaches to mitigate risks. Recommendations include enhancing research on AI solutions for SDGs and ensuring equitable access to technologies.	Integration of AI is seen as an opportunity for innovation in social work. Need for addressing ethical concerns and ensuring that AI complements rather than replaces human empathy in social work practice.

Table 3. Overview of Included Studies: The Studies 11 to 15

Category	Study 11	Study 12	Study 13	Study 14	Study 15
Author(s), Year	Brown, A., et al. (2019)	Steele, J. E., et al. (2017)	Umbrello, S., et al. (2021)	Bako, A. T., et al. (2021)	Pulsiri, N., et al. (2019)
Title	Toward Algorithmic Accountability in Public Services: A Qualitative Study of Affected Community Perspectives on Algorithmic Decision-Making in Child Welfare Services	Mapping Poverty Using Mobile Phone and Satellite Data	Value Sensitive Design to Achieve the UN SDGs with AI: A Case of Elderly Care Robots	Using Natural Language Processing to Classify Social Work Interventions	Achieving Sustainable Development Goals for People with Disabilities through Digital Technologies
Journal	CHI Conference on Human Factors in Computing Systems Proceedings	Journal of the Royal Society Interface	Minds and Machines	American Journal of Managed Care	Proceedings of PICMET '19
Country	New Zealand	Bangladesh	Italy	United States	Thailand
Study Design	Qualitative Study	Geostatistical Modeling Study	Theoretical and Conceptual Review	Empirical Study Using Machine Learning	Conceptual
Methodology	Workshops involving families, frontline child welfare providers, and specialists to gather perspectives on algorithmic decision-making in child welfare services. Data were analyzed using a grounded theory approach.	The study used hierarchical Bayesian geostatistical models (BGMs) to predict poverty across Bangladesh by integrating mobile phone call detail records (CDRs) and remote sensing (RS) data.	Value Sensitive Design (VSD) methodology combining empirical, conceptual, and technical investigations with the application of VSD principles to AI-driven care robots.	The study applied Natural Language Processing (NLP) and Machine Learning (ML) algorithms to extract and classify social work interventions from electronic health records (EHR) data. The classification involved a 10-category scheme based on literature and expert consultations.	The study involves reviewing digital technologies and their impact on achieving the Sustainable Development Goals (SDGs) for people with disabilities.
Data Collection Methods	Focus groups, participatory workshops, and scenario-based discussions with comfort maps to evaluate participants' trust and perceived benefits of algorithmic decision-making.	Mobile phone metadata (call detail records), remote sensing satellite data, household surveys (Demographic and Health Surveys, Progress out of Poverty Index, and income data collected by Grameenphone).	Review of existing literature and case studies on care robots for elderly patients, including ethical and design frameworks. No primary data collection.	The data were derived from Eskenazi Health's EHR system, including 815 social worker encounter notes from 408 patients. NLP was used to extract and classify these notes.	Review of various global reports and practices related to digital technologies for people with disabilities.
AI Technology	Algorithmic decision-making tools used in child welfare services, specifically risk assessment algorithms.	Bayesian geostatistical models combining AI and data from mobile phone metadata, satellite imagery, and geographic	Autonomous care robots designed to assist elderly people with daily tasks, provide medical care, and offer companionship	Natural Language Processing (NLP), Machine Learning (ML), and algorithms such as Support Vector Machine (SVM), logistic regression,	The document discusses various digital technologies used to assist people with disabilities.

		information systems (GIS).	using AI technologies such as machine learning, deep learning, and AI-driven decision-making.	and Naive Bayes were used to classify social work interventions.	
Purpose	To explore the comfort levels, concerns, and perceptions of affected communities regarding the use of algorithmic tools in child welfare decision-making and to offer insights for designing more accountable systems.	To develop high-resolution poverty maps for low- and middle-income countries by integrating mobile phone data and remote sensing data, offering a more frequent and granular poverty estimation method.	To examine how AI-driven care robots for elderly patients can be designed in a way that aligns with human values, ethics, and the United Nations Sustainable Development Goals (SDGs).	To automate the identification and classification of social work interventions using NLP and ML, improving understanding of social needs and enabling better resource allocation and staffing decisions in healthcare organizations.	To explore how digital technologies can contribute to achieving SDGs for individuals with disabilities by promoting social inclusion and independence.
Application in Social Work	The study directly applies to social work in child welfare, assessing how AI-based tools like risk algorithms affect decision-making processes involving families and social workers.	The study's focus on poverty mapping can assist social services in targeting resources more effectively to impoverished areas.	The study touches on the broader implications for social care, particularly the role of AI in improving care for vulnerable populations, such as the elderly, by offering companionship, safety, and personalized care.	The study directly applies to social work in healthcare settings, enabling automated classification of social work interventions such as care coordination, financial planning, and education. This facilitates better management of social needs in patient populations.	The application to social work involves improving the support systems for people with disabilities through enhanced access to technologies that address daily challenges, fostering inclusion and participation in society.
SDGs Addressed	SDG 10 (Reduced Inequalities)	SDG 1 (No Poverty) SDG 10 (Reduced Inequality)	SDG 3 (Good Health and Well-being) SDG 10 (Reduced Inequalities)	SDG 3 (Good Health and Well-being) SDG 10 (Reduced Inequalities)	SDG 3 (Good Health and Well-being) SDG 4 (Quality Education) SDG 8 (Decent Work and Economic Growth) SDG 10 (Reduced Inequality)
Contribution to SDGs	The study contributes by highlighting the need for equitable, transparent, and fair algorithmic systems that do not exacerbate existing inequalities in public services.	The study improves the capacity to monitor poverty in real-time and at a finer spatial scale, supporting efforts to achieve SDG 1 (No Poverty) and SDG 10 (Reduced Inequalities). It provides a framework to inform poverty reduction policies by identifying the most vulnerable areas.	The use of AI-driven care robots is seen as contributing to better healthcare outcomes (SDG 3) by improving care accessibility and reducing the burden on caregivers. Additionally, the deployment of care robots addresses inequalities in access to healthcare, especially for	The study contributes to better health outcomes (SDG 3) by improving the identification and delivery of social work interventions, and it helps reduce inequalities (SDG 10) by ensuring more accurate identification of patients' social needs.	Digital technologies support people with disabilities by reducing inequalities (SDG 10), improving access to healthcare and education (SDGs 3 and 4), and fostering economic inclusion through decent work opportunities (SDG 8).

			vulnerable elderly populations (SDG 10).		
Key Findings	Participants expressed low comfort levels with algorithmic decision-making due to distrust in the system, concerns about bias in both the data and algorithms, and a lack of transparency in how decisions are made. They emphasized the importance of human involvement alongside algorithmic tools.	Models integrating mobile phone data with satellite data yielded the best predictive accuracy ($R^2 = 0.78$ in urban areas) for poverty mapping. Mobile data alone was effective in urban areas but not as much in rural areas. The models showed that mobile phone top-up patterns and nighttime lights were significant indicators of poverty.	AI-driven care robots, when designed with ethical considerations, can enhance care quality, autonomy, and companionship for elderly patients. However, the study emphasizes that human values such as attentiveness, responsibility, competence, and reciprocity must be integrated into the design process.	The most common interventions identified were care coordination (21.5%), education (21.0%), and financial planning (18.5%). The study showed that NLP and ML techniques can be effectively used to classify social work interventions with high accuracy (SVM: 97% accuracy).	Digital technologies are increasingly important for the inclusion of people with disabilities. These technologies provide greater access to healthcare, education, and employment, while also helping to overcome physical and social barriers.
Challenges	Systemic distrust in public services, potential biases in the data used by algorithms, lack of transparency in decision-making processes, and concerns over the fairness and accuracy of algorithmic decisions.	The main challenge lies in the variation of data availability and the potential noise in mobile phone data, especially in less connected or rural areas. Integrating multiple data sources is essential for more accurate predictions.	Challenges include ethical concerns regarding privacy, data security, and the potential for over-reliance on robots at the expense of human interaction. There is also the challenge of ensuring fairness and avoiding harm in AI decision-making processes.	Challenges include the complexity of unstructured EHR data, variability in documentation practices, and the small sample size, which limited the performance of some algorithms.	The primary challenges include accessibility issues related to technology, unequal access to digital tools, and the need for regulatory frameworks to ensure that digital solutions are inclusive.
Conclusions and Suggestions	The study recommends addressing system-level concerns about public services, improving transparency, weighing both positive and negative data in algorithms, and enhancing communication between social workers and affected families to increase trust in algorithmic tools.	The study concludes that mobile phone and satellite data can significantly enhance the accuracy of poverty mapping, especially in low- and middle-income countries with limited traditional census data. It suggests expanding the use of these data sources to monitor poverty trends in real-time and at a granular level to inform effective policymaking.	The paper concludes that care robots, designed through a Value Sensitive Design approach, can promote well-being and autonomy for elderly populations. The authors recommend a multi-tiered approach combining ethical guidelines, human values, and the SDGs to ensure AI systems contribute positively to society.	NLP and ML can be used to automate the identification of social work interventions, improving healthcare organizations' ability to address patients' social needs. Future research should focus on expanding the classification scheme and improving algorithm performance with larger datasets.	The study concludes that while digital technologies can significantly support individuals with disabilities in achieving independence and inclusion, there is a need for continued efforts to ensure equitable access and implementation. Suggestions include increasing investment in accessible technologies and creating policies that promote digital inclusion.

Table 4. Overview of Included Studies: The Studies 16 to 20

Category	Study 16	Study 17	Study 18	Study 19	Study 20
Author(s), Year	Molala, T.S. & Mbaya, T.W. (2023)	Gillingham, P. (2019)	Goldkind, L., et al. (2021)	Nadarzynski, T., et al. (2021)	Reamer, F. G. (2023)
Title	Social Work and Artificial Intelligence: Towards the Electronic Social Work Field of Specialisation	Decision Support Systems, Social Justice and Algorithmic Accountability in Social Work: A New Challenge	Data Justice: Social Work and a More Just Future	Barriers and Facilitators to Engagement with Artificial Intelligence (AI)-based Chatbots for Sexual and Reproductive Health Advice: A Qualitative Analysis	Artificial Intelligence in Social Work: Emerging Ethical Issues
Journal	International Journal of Social Science Research and Review	Practice: Social Work in Action	Journal of Community Practice	Sexual Health	International Journal of Social Work Values and Ethics
Country	South Africa	Australia	United States	United Kingdom	United States
Study Design	Conceptual	Critical review	Conceptual	Qualitative Study	Literature review
Methodology	Integrative literature review, summarizing existing studies on the use of AI in social work	The study involves a combination of published research articles and gray literature to review examples of DSS in different contexts.	Review of data justice frameworks and critical examination of how data-driven systems affect marginalized communities.	Semi-structured interviews exploring participants' interactions with AI-based chatbots for sexual and reproductive health advice.	Comprehensive examination of AI's ethical issues in social work based on existing literature and guidelines.
Data Collection Methods	Literature review of peer-reviewed journals and credible corporate publications on AI and digital capabilities of social workers.	Literature review (published and gray literature)	Literature review and case examples.	Face-to-face and online interviews with 40 participants from Southeast England, who interacted with the "PAT" chatbot for 10 minutes.	Existing studies, ethical standards, and protocols.
AI Technology	Chatbots, Predictive Analysis, and AI-assisted tools like SCU-B, Woebot, and Help4Mood for mental health support.	Decision Support Systems (DSS), Predictive Risk Modelling, Algorithmic Decision-Making Tools.	The paper discusses various forms of data-driven automation, including algorithmic decision systems and predictive policing tools.	AI-led chatbots, particularly "PAT," a chatbot designed for sexual and reproductive health advice using natural language processing.	Various AI applications such as Woebot, Wysa, and predictive analytics tools like The Trevor Project's Crisis Contact Simulator.
Purpose	To explore the intersection of AI and social work, propose educational and professional development programs for e-social work, and recommend how AI can ethically and effectively be integrated into social work	To explore the challenges of DSS in social work, focusing on how algorithms can perpetuate social injustice and how social workers can apply principles of algorithmic accountability to challenge DSS recommendations.	To explore the implications of data justice for social work and advocate for practices that align with social justice principles, emphasizing the need for transparency, accountability, and nondiscrimination in the use of data technologies.	To identify the barriers and facilitators to engagement with AI-based chatbots for sexual and reproductive health advice and to inform the development of such technologies.	To examine ethical issues related to AI use in social work, apply relevant ethical standards, and propose strategies for ethical AI integration in the profession.

	practice.				
Application in Social Work	The paper advocates for the use of AI in areas like mental health interventions, early detection of conditions like depression and anxiety, and improving social work practices through digital technologies.	The application of DSS in social work is particularly discussed in child welfare services, where DSS tools are used to predict child maltreatment and support decision-making. The article also highlights the role of DSS in criminal justice.	The article highlights the use of data in social work practice, particularly in systems like welfare benefits, policing, and human services. It examines how these data systems impact service provision and outcomes for marginalized communities.	AI-based chatbots like "PAT" can be used in sexual health education and signposting to relevant services. They could also help increase engagement with services by providing anonymous, non-judgmental advice.	AI is used in clinical practice (risk assessment, crisis intervention), administrative tasks (data management), and policy development (predictive analytics).
SDGs Addressed	SDG 3 (Good Health and Well-being) SDG 4 (Quality Education) SDG 10 (Reduced Inequalities)	SDG 10 (Reduced Inequalities) SDG 16 (Peace, Justice, and Strong Institutions)	SDG 10 (Reduced Inequalities) SDG 16 (Peace, Justice, and Strong Institutions).	SDG 3 (Good Health and Well-being)	SDG 10 (Reducing Inequalities)
Contribution to SDGs	By integrating AI into social work, the paper contributes to improved healthcare access (SDG 3), digital training for social workers (SDG 4), and reducing disparities in mental health care (SDG 10).	The article contributes to the discussion on how technology in social work can both promote and hinder social justice, emphasizing the need for accountability in algorithmic decision-making to avoid deepening social inequalities.	The article emphasizes the need for data justice in social work, addressing how data-driven technologies can either mitigate or exacerbate social inequalities. It advocates for practices that protect human rights and promote equity.	The use of AI chatbots in sexual health services could improve accessibility to health information and services, particularly for marginalized or embarrassed individuals. This could contribute to better health outcomes and reduced health inequalities.	AI in social work contributes by improving service delivery to vulnerable populations and addressing systemic biases.
Key Findings	AI has the potential to significantly enhance social work practices, particularly in mental health. Predictive models and chatbots could help in early detection and intervention, improving overall service delivery. However, digital skills among social workers are lacking, highlighting the need for specialized training.	DSS can perpetuate social injustices if not properly scrutinized and held accountable. There is a lack of guidance for social workers on how to challenge DSS recommendations. Algorithms can reinforce biases present in the data they are trained on. There is an emerging critique of the limitations of big data and algorithmic decision-making in social welfare.	Data-driven systems can perpetuate harm, especially in marginalized communities, through biased algorithms and lack of transparency. The privatization of data systems and algorithms limits accountability and exacerbates inequality. Social workers need to engage with data justice frameworks to address these issues and protect clients' rights.	Chatbots are perceived as useful for providing anonymous and convenient sexual health advice.; They are considered helpful for sensitive topics, such as STI risks, and can improve access to services.; However, participants expressed concerns about the lack of empathy, limited interactivity, and insufficient content offered by chatbots.	AI has significant potential to enhance social work but also raises ethical issues such as informed consent, privacy, transparency, and algorithmic bias.
Challenges	The profession has been slow to adopt AI, and there is concern about	The opacity of algorithmic decision-making, making it difficult	Lack of transparency in how data-driven decisions are made.	Participants were concerned about privacy, trust, and data security when	Ethical challenges include misdiagnosis, client abandonment,

	maintaining ethical standards such as confidentiality, informed consent, and professional boundaries when using AI technologies.	for social workers to understand and challenge DSS recommendations. Biases in the datasets used to train DSS, which can lead to inaccurate or unjust outcomes. Lack of clear guidance for social workers on how to navigate DSS in practice.	The challenge of advocating for clients in a system dominated by proprietary algorithms. Data poverty and inequality in access to data technologies for smaller organizations.	using chatbots for sexual health matters. Chatbots were seen as less effective than human health professionals, particularly for complex or emotionally sensitive issues. The technology was perceived as underdeveloped and lacking in providing personalized, detailed advice.	surveillance risks, algorithmic bias, and issues of transparency.
Conclusions and Suggestions	The paper suggests developing interdisciplinary educational programs that integrate AI into social work. It also calls for continuous professional development (CPD) on the ethical use of AI in practice and suggests that institutions of higher learning and professional bodies create policies and guidelines for e-social work.	Social workers must adopt principles of algorithmic accountability to challenge unjust recommendations made by DSS. More training is needed for social workers to understand how DSS algorithms work. DSS designers should anticipate challenges to their systems and build transparency into the algorithmic processes.	Social workers must embrace data justice frameworks to ensure that data technologies are used in ways that promote equity and justice. Advocacy for transparency, accountability, and community involvement in data processes is critical to safeguarding human rights in a data-driven society. Social work education should integrate computational and data science tools to prepare practitioners for the challenges of working in a data-rich environment.	AI-based chatbots could serve as a supplementary tool for sexual health education and service access but are not seen as a replacement for human professionals. Future development of chatbots should focus on improving interactivity, empathy, and trustworthiness. More research is needed to assess the impact of chatbots on health outcomes and service utilization.	The paper suggests developing comprehensive ethical guidelines, forming steering committees, conducting peer reviews of AI protocols, and integrating AI training into social work education.

Table 5. Overview of Included Studies: The Studies 21 to 25

Category	Study 21	Study 22	Study 23	Study 24	Study 25
Author(s), Year	Iqbal, F., et al. (2023)	Upreti, N.C. et al. (2023)	McBride, L and Nichols, A.(2016)	Aldkheel, A. M., & Zhou, L. (2023)	Rodriguez, M.Y., et al. (2019)
Title	Predictive Analytics in Smart Healthcare for Child Mortality Prediction Using a Machine Learning Approach	Towards a Healthier Future: The Transformative Role of AI in Promoting Good Health and Well-being (SDG-3)	Retooling Poverty Targeting Using Out-of-Sample Validation and Machine Learning	How to Support Domestic Violence Survivors with Conversational Agents: Meta Requirements and Design Principles	Bridging the Gap: Social Work Insights for Ethical Algorithmic Decision-Making in Human Services
Journal	Open Life Sciences	Conference paper presented at the First International Workshop on Artificial Intelligence: Empowering Sustainable Development (AISD 2023)	Policy Research	PACIS 2023 Proceedings	IBM Journal of Research and Development
Country	Pakistan	India	United States	United States	United States
Study Design	Predictive analytics framework development using machine learning models	Review and analysis of AI's role in healthcare aligned with SDG-3	Machine learning techniques.	Qualitative research	Predictive modeling
Methodology	Machine learning algorithms such as Decision Tree (DT), Random Forest (RF), Naive Bayes (NB), and Extreme Gradient Boosting (XGB) were applied to child mortality data.	Comprehensive literature review of AI applications in healthcare and their impact on achieving SDG-3	Use of quantile regression and stochastic ensemble methods for PMT development.	In-depth interviews with 11 professionals working with domestic violence survivors, followed by thematic analysis to develop meta-requirements and design principles	The study employs a risk and resilience framework, using Random Forest models to examine child welfare data, focusing on both risk and protective factors
Data Collection Methods	Data were collected from the Pakistan Demographic Health Survey (PDHS), involving a total of 12,479 children under the age of five. The dataset was pre-processed using methods like multiple imputation for missing values and synthetic minority over-sampling technique (SMOTE) to balance the dataset.	Analysis of scholarly publications, case studies, and healthcare applications of AI	Replication of USAID and LSMS datasets for PMT tool development.	Semi-structured interviews, thematic analysis of transcripts	Data from the 2017 National Child Abuse and Neglect Data System
AI Technology	Machine learning techniques—Decision Tree (DT), Random Forest (RF), Naive Bayes (NB),	Machine learning, natural language processing (NLP), computer vision, predictive analytics, robotics	Use of stochastic ensemble methods and quantile regression forests.	Conversational agents (CAs) designed to interact with domestic violence survivors using natural	Random Forest models and predictive analytics were used for decision-making in child welfare cases.

	Extreme Gradient Boosting (XGB)			language processing	
Purpose	To develop a predictive model that can accurately predict child mortality in Pakistan using machine learning methods, allowing health professionals to make timely interventions and reduce child mortality rates.	To explore how AI can contribute to achieving SDG-3 by improving healthcare access, enhancing diagnostics, and addressing global health challenges	To improve the accuracy of poverty targeting tools using advanced statistical methods and machine learning techniques.	To identify meta-requirements and develop design principles for conversational agents that support domestic violence survivors	To explore how AI models, combined with social work insights, can be used ethically in child welfare services, particularly by considering protective factors to improve predictive models .
Application in Social Work	Improving healthcare outcomes and enabling timely interventions to reduce child mortality, which can guide social policies in public health.	AI can improve healthcare outcomes by supporting marginalized populations through better diagnostics, personalized care, and equitable access to medical services	Mainly in poverty assessment and targeting for social safety nets and microenterprise projects.	Supports domestic violence survivors through conversational agents to provide emotional, informational, and practical assistance .	The application of AI aims to enhance decision-making in child welfare by considering both risk and protective factors, improving outcomes for children .
SDGs Addressed	SDG 3 (Good Health and Well-being)	SDG 3 (Good Health and Well-being)	SDG 1 (No Poverty)	SDG 5 (Gender Equality)	SDG 16 (Peace, Justice, and Strong Institutions)
Contribution to SDGs	The study aims to contribute to SDG 3 by providing insights into the risk factors influencing child mortality and creating predictive models that allow for timely interventions, thus reducing under-five mortality.	AI's transformative role in healthcare helps reduce mortality, improve maternal health, optimize resource distribution, and enhance overall well-being.	The proposed methods could significantly enhance poverty alleviation efforts by improving the precision of targeting interventions to those in need.	By developing CAs for supporting domestic violence survivors, this research contributes to improving gender equality and empowerment .	By improving the accuracy and fairness of decision-making in child welfare, the study contributes to reducing inequality and protecting vulnerable children .
Key Findings	Random Forest outperformed other machine learning models with 93.8% accuracy, identifying key risk factors such as the number of under-five children in a household, preceding birth interval, antenatal care visits, breastfeeding, and place of delivery as crucial predictors of child mortality.	AI technologies are capable of early disease detection, personalized treatment, and optimizing healthcare services, but ethical concerns such as data privacy and algorithmic bias need to be addressed.	Cross-validation and stochastic ensemble methods outperform traditional methods for PMT tool development in terms of poverty accuracy and reducing undercoverage.	Meta-requirements for CAs include conversational design, language use, support provision, and trust building. These inform the development of CAs that can provide emotional, informational, and instrumental support.	The inclusion of protective factors in predictive models helps mitigate bias, providing more equitable outcomes in child welfare decisions.
Challenges	Key challenges include data limitations such as recall bias in mothers' reporting	Ethical considerations around data privacy, algorithmic bias,	The need for publicly available datasets with comparable variables across	Lack of explicit discussion of CA design principles for domestic violence survivors,	The study highlights the challenge of ensuring equitable model performance

	and the inability to identify specific causes of mortality from the dataset. Additionally, achieving equitable healthcare access remains a challenge.	equitable access, and integration of AI tools in healthcare systems.	countries limits the tool's broader applicability.	and limitations in existing conversational agents that offer standardized information.	across demographic groups and the issue of data accuracy and contemporality.
Conclusions and Suggestions	The predictive analytics framework developed using Random Forest provides an efficient tool for predicting child mortality. It is suggested that further enhancements, such as using AutoML for more accurate predictions and reducing user-computer interaction, could improve the system. Additionally, expanding the study to explore specific causes of child mortality would further inform interventions.	AI can revolutionize healthcare if challenges related to privacy, bias, and equitable implementation are addressed. It is crucial for stakeholders to collaborate to ensure responsible AI integration that supports healthcare professionals and enhances patient care.	There is significant potential for using machine learning methods in poverty assessment, and further exploration in this area is encouraged.	The study offers design principles to enhance CA effectiveness in supporting survivors, emphasizing empathy, confidentiality, and appropriate information provision .	The authors suggest that human services should incorporate strengths-based perspectives and protective factors in AI models to reduce bias and improve fairness in decision-making .

Table 6. Overview of Included Studies: The Studies 26 to 30

Category	Study 26	Study 27	Study 28	Study 29	Study 30
Author(s), Year	Grant, D. G. (2018)	Palomares, I., et al. (2021)	Cariceo, et al. (2018)	Victor, B. G., et al. (2021)	Yigit, P. (2023)
Title	Ethics and Artificial Intelligence in Public Health Social Work	A panoramic view and SWOT analysis of artificial intelligence for achieving the sustainable development goals by 2030: progress and prospects	Data Science for Social Work Practice	Automated Identification of Domestic Violence in Written Child Welfare Records: Leveraging Text Mining and Machine Learning to Enhance Social Work Research and Evaluation	Self-Organizing Maps Approach for Clustering OECD Countries Using Sustainable Development Indicators
Journal	Artificial Intelligence and Social Work (Book)	Applied Intelligence	Methodological Innovations	Journal of the Society for Social Work and Research	Journal of the Human and Social Science Researches
Country	United States	Spain	Chile	United States	Turkiye
Study Design	Case study	Review study with SWOT analysis	Conceptual	Feasibility study for text mining and machine learning	Two-stage clustering method using Self-Organizing Map (SOM) and hierarchical clustering methods
Methodology	Ethical analysis of AI interventions in social work, using moral philosophy and theoretical computer science to understand ethical dilemmas.	A comprehensive literature review and SWOT analysis of AI technologies in relation to the Sustainable Development Goals (SDGs).	The paper synthesizes key data science concepts and applies them to social work. It focuses on a conceptual discussion.	Machine learning and text mining to classify documents for identifying domestic violence.	Descriptive statistics and Spearman rank correlation analysis, followed by SOM and hierarchical clustering analysis
Data Collection Methods	Interviews and social network analysis; collecting information about participants' past drug use and social networks.	Literature review, analysis of scientific publications, SWOT analysis.	Review of secondary sources such as research papers and reports	Narrative text summaries from child welfare investigation records, manually labeled by human coders and then analyzed using machine learning models.	Data was collected from 38 OECD member countries for 11 variables spanning 2019-2021
AI Technology	Autonomous software agents, specifically designed to optimize groupings of participants in social work interventions	Various AI technologies, including machine learning, big data, IoT, blockchain, and robotics, as applied to address the SDGs.	Machine learning and data-driven approaches, emphasizing predictive modeling and algorithms.	Text mining and machine learning, particularly using k-nearest neighbor and rule-based models.	Self-Organizing Map (SOM), a type of artificial neural network (ANN) used for clustering analysis
Purpose	To address ethical dilemmas in the use of AI in public health social work interventions, particularly those involving homeless youth and drug	To provide a comprehensive analysis of how AI technologies can contribute to achieving the SDGs, focusing on progress,	To explore how data science, including big data and machine learning, can enhance social work practices and evidence-based	To evaluate the feasibility of using machine learning and text mining for identifying domestic violence within child welfare records.	To examine the impact of COVID-19 on selected Sustainable Development (SD) indicators in OECD countries.

	prevention.	challenges, and prospects.	interventions.		
Application in Social Work	AI is used to plan interventions, such as dividing groups of at-risk youth for drug prevention programs.	AI's application across sectors can influence social work-related SDGs like poverty reduction, health, education, and gender equality.	The paper suggests that data science can improve decision-making, predict outcomes, and enhance evidence-based practice in fields such as public health, child welfare, and domestic violence interventions.	The study analyzes child welfare records, improving the identification of domestic violence cases to aid in service provision and decision-making in social work.	The study offers insights into how clustering methods can be used to understand social and economic disparities, which could inform social policy interventions.
SDGs Addressed	SDG 3 (Good Health and Well-being)	all 17 SDGs	SDG 3 (Good Health and Well-being), SDG 4 (Quality Education), and SDG 16 (Peace, Justice, and Strong Institutions)	SDG 16 (Peace, Justice, and Strong Institutions)	SDG 3 (Good Health and Well-being), SDG 8 (Decent Work and Economic Growth), and SDG 2 (Zero Hunger)
Contribution to SDGs	The AI intervention aims to improve the effectiveness of public health interventions, particularly in reducing drug use among vulnerable populations like homeless youth.	The study identifies how AI technologies can be leveraged to accelerate progress toward the SDGs and provides a roadmap for future applications.	The article discusses how data science can support evidence-based social interventions that contribute to improving well-being, reducing inequalities, and enhancing institutional effectiveness.	The study enhances the efficiency and accuracy of identifying domestic violence, supporting stronger child welfare interventions.	The study identifies how countries' performances on various SD indicators (such as health expenditure and life expectancy) were affected by the COVID-19 pandemic, informing policy decisions to improve these areas.
Key Findings	AI interventions can optimize the grouping of participants, but ethical dilemmas arise when maximizing overall benefits causes harm to some individuals.	AI has great potential to contribute to the SDGs, but challenges such as data availability, ethical concerns, and technology adoption must be addressed.	Data science and machine learning offer significant potential to improve social work practice, particularly in prediction, decision-making, and evidence-based interventions. However, challenges related to biases in algorithms and ethical concerns must be addressed.	Machine learning models can identify domestic violence in child welfare records with over 90% accuracy, suggesting this method could substantially improve the use of text data in social work.	The convergence of GDP increased over the years, showing greater variability across OECD countries. Life expectancy decreased during the pandemic, while health expenditures, unemployment rates, and consumer price indexes increased.
Challenges	Balancing the ethical duties of avoiding harm and benefit maximizing population-wide benefits, especially when some individuals may be harmed by	Ethical dilemmas, the digital divide, environmental impacts of AI, regulatory challenges, and the need for trustworthy AI.	Bias in machine learning algorithms; The tension between predictive data use and understanding causal relationships; Ethical concerns	The reliance on caseworkers' summaries may underreport the prevalence of domestic violence, and the models cannot be used for individual case	The study highlights the disparity in economic and health-related indicators across OECD countries, exacerbated by the COVID-19

	interventions that benefit others.		related to privacy and the potential for reinforcing social inequalities.	decision-making due to some classification errors.	pandemic.
Conclusions and Suggestions	AI interventions in public health must be designed with careful attention to ethical principles, including minimizing harm to individuals while achieving overall benefits for the population. Specific modifications to AI systems (e.g., adding safety constraints) are suggested to address these challenges.	The study recommends a balanced and responsible implementation of AI technologies, ensuring ethical considerations, data security, and inclusivity to maximize their positive impact on achieving the SDGs by 2030.	The paper concludes that social workers need to adopt data science techniques to improve their practice, but they must also critically evaluate and address the ethical implications of these technologies.	Machine learning can enhance social work research by scaling the analysis of large datasets. It is suggested that further qualitative reviews and improvements to caseworker documentation be made to improve the models' accuracy.	The study concludes that OECD countries showed similar characteristics over the studied years, except for some outliers like the USA. It calls for more robust clustering methods and further research to better understand the impact of global crises like COVID-19 on SDGs .

4. Discussion

The findings from this scoping review highlight the emerging role of artificial intelligence (AI) in social work and its potential contributions to achieving the Sustainable Development Goals (SDGs). By examining various studies that applied AI technologies across different social work practices, this review underscores the transformative potential of AI for enhancing social services, improving client outcomes, and fostering social good. However, the integration of AI in social work also presents significant challenges, particularly concerning ethical considerations, the need for appropriate training, and policy implications.

The reviewed studies demonstrate that AI can significantly enhance the effectiveness and efficiency of social work interventions. For instance, the use of machine learning algorithms in child welfare (as shown in Study 1, Study 11 and Study 21) enables more accurate predictions of risk factors, allowing social workers to prioritize cases and allocate resources more effectively. Similarly, the application of natural language processing (NLP) and sentiment analysis (as in Study 2, Study 14 and Study 29) provide valuable insights into client narratives, facilitating better needs assessments and tailored interventions.

These AI applications directly contribute to several SDGs, such as SDG 1 (No Poverty) by optimizing resource allocation and improving access to services for vulnerable populations (as in Study 3, Study 12, Study 23 and Study 27), and SDG 3 (Good Health and Well-being) by enhancing the early detection of social and mental health issues (as in Study 4, Study 13, Study 22 and Study 30). Additionally, AI tools like chatbots in crisis intervention (Study 5) support SDG 5 (Gender Equality) by providing immediate assistance and resources to individuals facing domestic violence and other forms of gender-based violence (as in Study 19, and Study 24).

AI technologies also play a crucial role in promoting SDG 16 (Peace, Justice, and Strong Institutions) by enhancing decision-making processes and promoting transparency and accountability in social service delivery (Study 6, Study 15 and Study 17). These technologies offer a data-driven approach to understanding complex social issues, which can inform policy-making and foster stronger, more equitable institutions.

The integration of AI into social work practice necessitates a paradigm shift in how services are delivered and how social workers are trained. The findings suggest that while AI can enhance service delivery, it requires social workers to develop new skills and competencies in technology use (Study 7, Study 10, Study 16 and Study 28). This shift underscores the need for comprehensive training programs that equip social workers with the necessary knowledge to effectively use AI tools. As suggested by Study 8, incorporating AI and data literacy into social work education curricula could prepare future practitioners to leverage these technologies responsibly and ethically.

Moreover, the studies highlight several ethical challenges that arise with AI use in social work. Issues such as data privacy, algorithmic bias, and the transparency of AI models (as discussed in Study 9, Study 20, Study 26) are critical concerns that need to be addressed. There is a pressing need for ethical guidelines that govern the use of AI in social work to ensure that these technologies do not inadvertently harm clients or reinforce existing inequalities. Developing frameworks for ethical AI use, as recommended by almost all studies, is essential for safeguarding the rights and dignity of clients while

maximizing the benefits of AI.

The implications of AI use also extend to social work policy. Policymakers need to consider the potential of AI to improve social services and create policies that support the integration of these technologies in a way that aligns with social work values and principles. Policies should promote equitable access to AI tools and address the digital divide that may prevent certain populations from benefiting from AI-enhanced services (as highlighted in Study 18, Study 25 and Study 30). Furthermore, there should be a focus on developing public-private partnerships that foster innovation in AI applications for social work, ensuring that these advancements are accessible and affordable to all service providers.

5. Conclusion and Suggestions

The findings of this scoping review underscore the transformative potential of artificial intelligence (AI) in social work and its ability to contribute significantly to achieving the Sustainable Development Goals (SDGs). By leveraging AI technologies, social work professionals can enhance their practices, improve service delivery, and address complex social challenges more effectively. However, the integration of AI into social work is not without challenges. It necessitates careful consideration of ethical, technical, and practical issues to ensure that these technologies are used in ways that align with the core values and principles of social work. Given the rapid advancement of AI technologies and their increasing application in social work, the need for ongoing training and professional development cannot be overstated. Social workers must be equipped with technical skills and an understanding of the ethical implications of AI. Training programs should focus on developing competencies in data management, algorithmic literacy, and ethical decision-making, ensuring that social workers are prepared to navigate the complexities of AI-enhanced practice.

Additionally, the development of clear ethical guidelines for AI use in social work is crucial. These guidelines should address issues of consent, privacy, and data security, ensuring that AI tools are used in a manner that respects the autonomy and rights of clients. Guidelines should also include strategies for mitigating algorithmic bias and ensuring that AI applications do not perpetuate social inequities. To address algorithmic bias in social services, organizations should ensure that AI training data includes diverse populations and conduct regular bias audits to identify discriminatory outcomes. Involving stakeholders from various backgrounds in the design and testing of AI tools can help uncover potential biases, while transparency in algorithmic processes allows for scrutiny and accountability. Continuous monitoring of AI performance is essential to swiftly address any biased outcomes that may arise. Regarding data privacy, implementing data minimization practices, where only necessary data is collected, is crucial. Organizations should ensure informed consent from clients about data usage, adopt strong cyber security measures to protect sensitive information, provide ongoing training for staff on data privacy laws, and empower clients by giving them control over their personal data. By incorporating these strategies, social services can navigate the ethical challenges posed by AI, safeguard clients' rights, and promote equity. As the studies reviewed suggest, a collaborative approach involving social work practitioners, AI developers, and policymakers is needed to develop robust ethical frameworks that safeguard both clients and practitioners.

Maximizing the benefits of AI in social work requires a collaborative approach that brings together AI experts, social work professionals, and policymakers. This interdisciplinary collaboration is crucial for developing AI tools that are not only technically robust but also ethically sound and culturally sensitive. AI experts bring technical knowledge and skills necessary for developing and implementing AI technologies, while social work professionals offer insights into the ethical, social, and cultural dimensions of their use. Together, these experts can co-create AI applications that are responsive to the unique needs of social work clients and practitioners, ensuring that AI tools enhance rather than undermine the profession's commitment to social justice and human rights. To foster such collaboration, there should be ongoing dialogues and partnerships between universities, research institutions, social service agencies, and technology companies. These collaborations can help bridge the gap between technical innovation and practical application, ensuring that AI technologies are designed and used in ways that are truly beneficial to social work practice. Furthermore, interdisciplinary training programs and workshops can help social work professionals acquire the technical skills needed to engage with AI technologies effectively while also sensitizing AI developers to the ethical considerations unique to social work.

In conclusion, the integration of AI into social work offers a unique opportunity to enhance the profession's impact on achieving the SDGs and promoting social good. However, to maximize these benefits, it is crucial to continue investing in research, fostering collaboration between AI experts and social work professionals, and developing robust ethical guidelines and policies. As AI technologies evolve, social work must also evolve, embracing innovation while staying true to its core values of social justice, equity, and respect for human dignity. Moving forward, the social work profession should advocate for a balanced approach that harnesses the power of AI while remaining vigilant about its potential risks. By doing so, social work can position itself as a leader in the ethical and effective use of AI, contributing not only to the advancement of the profession but also to the broader goal of achieving sustainable development for all. Through continued research, collaboration, and ethical vigilance, social work can play a pivotal role in shaping the future of AI in ways that are inclusive, equitable, and aligned with

the global pursuit of social justice and human well-being.

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