

APPLICATION OF ARTIFICIAL INTELLIGENCE TOOLS IN NURSING RESEARCH WITH ETHICAL AND LEGAL IMPLICATIONS: REVIEW ARTICLE

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Abstract

Background: AI tools have become essential in the research process, currently playing an indispensable role in academic writing and nursing Research. **Aim:** to address different accessible AI tools and clarify its benefits in relation to nursing research, the second aim is to highlight some challenges of using AI regarding ethical and legal issues. content delivered includes, different five AI accessible tools, (NotebookLM, paperpal, ResearchRabbit, semantic scholar, AI2 paper finder) discussing each one main functions, and benefits that it provides to nursing researches. The article addresses little challenges focusing on ethical and legal aspects of using AI tools in nursing research. **Conclusion:** The article concluded that AI is now an essential tools for nursing researchers that facilitate research process, starting from helping in initiating the research title, editing, paraphrasing and bibliography writing, in addition to at the same time the researchers should consider limitations of using AI tools including ethical and legal aspects as AI uses is not yet well addressed by all the academic institutions. **Recommendation:** institutions should claim a clear policies to clarify the limitations, and putting boundaries for using AI tools in academic writing and nursing research. However Applying AI tools are essential in nursing research, but they still have to be used with cautions.

Keywords: AI Tools, Nursing Research, Ethical Legal Issues.

INTRODUCTION

Artificial intelligence (AI) is a revolutionary industry worldwide (Bouchrika, 2026). The terminology (AI) was first coined by John McCarthy at a conference in Dartmouth in 1956 (Arangüena, 2024). The pervasive integration of AI in all life dimensions has affected healthcare, particularly practice and research, where it contains vast datasets to derive actionable insights and foster innovation. (Kommisetty, Vijay; & Rao, 2024). The disruptive technology of AI has made it easier and faster to automate processes in many industries. (Pävälöaia, V., & Necula, 2023).

General benefits of AI in research:

The healthcare field is no exception with the revolution of AI usage and applications. There is a significant increase in publications on AI in healthcare, particularly between

2019 and 2024, underscoring the rapid growth and development in this domain (Senthil et al., 2024). AI presents a transformative force in health care. The use of AI in healthcare enhances patient care, reduces errors, and broadens medical knowledge. However, its successful integration requires adaptability, complementary with human expertise; transparency; and a deliberate, incremental approach. (Bajwa, Munir, Nori, & Williams, 2021). AI is also used in many ways that are relevant to nurses, as Nurses should be involved in the conceptualization, development, and implementation of AI, especially when it impacts nursing practice, extended to healthcare research. (Bria, Ryan Shaw, Kay Lytle, 2022)

AI tools are of great and crucial importance in research. (Bouchrika, 2026), stated that AI(AI) is revolutionizing in academic research, as it has a potential applications in the automation of research techniques *starting by* generating Ideas, up to conducting the research itself, in accessing large banks of information; tackling issues related to peer-reviewing; searching published content; detecting plagiarism and grammar pitfalls; and checking the originality of data. AI could also do Predictive Analysis that helps researchers to predict trends or outcomes based on historical data, and Data Visualisation, through providing different tools that could facilitate the research process. (Khalif, et.al, 2023)

AI applications in Nursing research become inevitable, as long as they respect the ethical dimensions while using them. It would be helpful for nurse scientists and nursing researchers to use AI applications within their scope of practice and research (Al-Qudimat et al., 2025; SeyedAlinaghi et al., 2024). This surge in research interest highlights the expanding recognition of AI's capacity to revolutionise clinical workflows, from automating routine tasks to informing complex diagnostic and therapeutic strategies (Senthil et al., 2024) (Xie et al., 202).

Ethical and legal issues and consideration in using AI in research is not yet clear; Therefore, the current review aimed to summarize and conclude some of the applications within healthcare research, examining its multiple dimensions' influence on some areas such as literature writing, journal summaries, articles gathering, categorization of research subjects, data entry, personalized medicine, and, in addition to highlighting some legal and ethical considerations. The following sections in the review summarize a collection of AI software applications that could be beneficial to nursing research. The article highlights the advantages, limitations, and future directions of selected AI tools in research, highlighting some of its benefits to nursing researchers that in role could help provide an overview for students, academics, and researchers in the field. The article also mentions some of the challenges and ethical considerations in using AI applications in Nursing research.

Examples of AI tools used in the following literature review includes ResearchRabbit, Paperpal, Ai2 paper finder, Google Notebook LM. However the researchers focused on scholarly AI rather than generative AI, as scholarly AI has the researcher to do the work with facilitation and giving a push forward by reducing the workload for researchers and improving the quality of writing.

The following are different research AI tools that could be beneficial to Nursing Researchers. The presented AI tools in the following are mostly scholarly not generative which depends on scholarly articles that have a real author and has mainly protect the intellectual property.

1- ResearchRabbit

ResearchRabbit is an innovative scholarly publication discovery tool. It is considered a "citation-based literature mapping tool" available online, developed in 2021 by a team of three in Seattle. The goal of the ResearchRabbit AI applications is to optimize the time of looking for literature reviews and references. The technique to use such an app is sequential, as the researcher starts by using one or more papers on a certain topic (called seed papers), and the app will find more papers related to the same topic. ResearchRabbit helps to find gaps and links between different topics and research (Cole, Boutet, 2023)

Advantages of ResearchRabbit that it is completely free of charge, and the nurse scientist or researcher could gather lot of articles related to certain topic in an easy way and feasible, in addition to the ability of categorizations, the second advantage of the ResearchRabbit app in nursing research as the software of the APP can scans for all available source that are published online related to certain topic, and select papers based on their similarities. However, the disadvantage it seems to only work for scholarly papers, and therefore is unlikely to find other sources of information that are not journal articles, such as books and different sort of publications. (Harvy et, al. 2024).

Another advantage is that the application is free and doesn't require a professional or organizational email, with the main advantage that it has no time limit to use. One more advantage that the nurse researcher could develop their own account and library, that's why it is relevant tool for researchers in developing countries such as Egypt where lot of researcher could develop their own collection of researches and save it to the personal e-account so they can gather researches related to one topic in one place, but also different selection for different topics more than one , at the same time all articles related to the same topic will be gathered together in one place.

2- AI2 paper finding

Developed by the Allen Institute for AI (AI2), this innovative and free "conversational" search engine is designed to streamline the research process. Instead of merely matching keywords, it utilizes a large language model to understand the intricate and complex ideas behind research questions. The tool explores the extensive Semantic Scholar database, follows citation trails, and uncovers relevant papers while providing brief summaries of why each paper is a good match for the research. It focuses on analyzing and understanding content rather than the tedious task of endlessly searching with different keyword combinations. Additionally, it efficiently identifies papers that are conceptually related to work instead of just lexically similar ones. (Kuka, 2025). The AI2 paper finding tool is a free and user-friendly tool that allows for downloads in various formats. It also offers the ability to organize reference lists according to the preferred citation style of the

researcher, such as APA or other reference formats. One of the main advantages of this app in research is its capability to answer questions and synthesize the information, making it easier for nurse researchers to find well-organised and categorized research answers. For instance, a researcher can input a specific query, and the app will provide citations for multiple papers that address the question. (Allen Institute, 2025).

The nurse researcher finds all papers published related to a certain topic. The application allows the researcher to arrange their research articles found by different methods, it can be sorted and arranged by relevancy (it from the most relevant to the least relevant); years of publishing, venue or by author.

3- Semantic scholar

Semantic Scholar is a free AI-powered research tool for scientific literature, offering AI-driven search and discovery tools along with open resources for the global research community. It encompasses over 200 million academic articles sourced from publisher partnerships and data providers. (semantic scholar, 2025). Semantic scholar allows researcher to easily find a huge number of research articles in certain topic, it will find all the researches related to the topic of interest and in addition to the availability of categorization where the researcher could find a Pdf format or according to the authors or date range and finally it could categorize the search according to the field of study including the references and citation for each research article (2025). Through semantic scholar researchers could develop their own online library, whenever they login to their account at any time, they could find their previous searches divided into topics, in addition to new feeds and related articles that match their previous search and interest. Semantic Scholar is a free application that make it easily accessible from over the world and in turn for Egypt.

4- Notebook LM

Notebook Lm is an AI app that can help the researcher to come across multiple researches at once, It can upload up to 50 articles per time in the form of PDF; It provide subcategories so the researcher can have different categories for particular topics and subtopics and give the ability to collect a vast number of references. It allows the researcher to chat with certain articles in the topic under study, one of the main advantages of NoteBook Lm is that it can summarize a topic of research not only from the articles published, but it also could merge the data from other file format such as videos and slides, added to that the researcher could ask the application to collect the data they needed during certain time period, such as 3 years or less or more, which make Notebook Lm a quick and efficient source that connect together the relevant points of the research under study. (Mackie, 2024).

NoteBook LM App facilitates work flow by summarizing related data , and help to focus on knowledge retrieval, it could give guidance for next step during planing , in addition; it has the availability that help the researcher to have a mind map for the research, that help to retract common themes and structures in the research topic among a huge amount of researches together at one time, and as it is known mind map is sub-categorized and

below such as subcategories the researcher can find a number of researches that focus on certain outline of the research subjects knowing that the mind map could cover all the outline research topic under study. It is designed to interpret a huge amount of researches together, it allows the researcher to know the reference of the source of the data needed. (Ma. 2024)

For nursing researcher when studying a research topic for certain diseases, they only need to upload all the PDF of certain topic, videos, and slides or any possible source for the selected topic, than ask Notebook LM a question to scan the uploaded articles, such as the incidence of certain disease during last 5 years, the application will interpret all the given articles for incidence and will select the last 5 years, helping the researcher by saving the time to read all the articles at the same time giving him the data in all articles.

More advantages for nursing researchers; that the notebook Lm tool could retrieve data easily and provide a Mind-Map that summarize the topic and sub-categorize each outline in a one group of data, which in role is very essential to nursing researches, for example it can collect related data that are relevant to the incidence and prevalence of certain disease, and grouping data in the articles related to its causes, added to that, the AI tools can categorize a group of articles that suggest the nursing management and protocol of care for the disease, with best nursing practices (Johnson, 2024). The NotebookLm is a tool that could generate podcast or multiple podcasts, showing interaction between two people and they are expressing their emotions from just a written article input. (Shabanov, 2024)

5- Paperpal:

Paperpal is an AI tool that delivers an error-free academic writing, with precise generative AI writing support, real-time subject-specific suggestions, and research and citation tools; it is considered one of the powerful application for researchers, it make academic life easier as it improves the quality of writing it contains many tools that facilitate the research process, such functions include paraphrasing, plagiarism check, language editing, translation, references citation, in-text citation. (George, 2025)

The Paperpal tool provides researchers with enormous functions that facilitate the research writing process, it reduces blocks it considered an all-in-one AI writing assistant for academics, provides human precision at machine speed. (cactus service Microsoft 2025); it also explores comprehensive language checks and provide suggestions for correction, including contextual AI writing suggestions, it contains a plagiarism checker, it assess the gap in the writing, it also provide suggestion to overcome those gaps, in addition, moreover, it helps writing accurate reference finder and citation generator and empower the researcher to write, and cite faster , with the ability to select which style of references the researcher need, example of these style is the APA style and other writing styles (cactus communication services, 2025)

Advantages of Paperpal is, that it helps researcher to overcome writer's block. Trained on millions of published scholarly articles and many years of language correction expertise by professional academic editors, Nursing researcher could benefits from the

application as it has many functions free of charge, it save the time of citations , helps in editing and writing, apply paraphrasing with features designed to help the delivery of quality research, high-quality content, every time. One of the main advantages of Paperpal is that does not generate full text to avoid over-reliance of researchers on AI outputs and empowers authors to have control over what they write (Durgumahanthi, 2025).

Ethical and Legal implications of Using AI:

Whereas AI tools provide enormous benefits, they also present challenges that researchers has to consider carefully in relation to legal and ethical issues. Examples of the challenges associated with some AI tools, is the possibility of receiving incorrect information and fake references and in-text citations, which could influence the quality of nursing researches negatively as reported by Islam, 2023 . In addition, the credibility of scientific research deeply depends on the accuracy of references and resources. Other challenges include tempting researchers to rely on AI for more than just receiving help in writing. (Cardon et.al 2023)

In a study done about the perception of academic reviewers about researchers and academic papers, they recognize the utility of AI for supporting routine tasks but remain concerned about bias, transparency, and its impact on scholarly independence (Ali & Shaban. (2025). The following section will discuss some of the ethical and legal aspects of using AI in research Addressing the legality of using Alis crucial.

Regarding Ethical issues, on one hand, raising the issue related to the assurance of the originality of the content, there is a potential for AI-generated content to hide the originality of the paper. On the second hand, the privacy of data generated from AI will demand careful management of sensitive information processed by AI tools. However, Universities and research institutions used to have strict policies regarding plagiarism and the use of external tools; using AI for grammar checks or style adjustments is generally acceptable, but generating entire sections of text may violate academic guidelines. For those reasons, Researchers must be transparent about the role AI played in their writing process to avoid potential ethical breaches, including legal liability. (Bouchrika 2025). a (Ali & Shaban. (2025)

Considering the legal aspects for AI generated research there is an inconsistent and unclear legal framework, as some parts of the world had strict legal consideration others are open to AI-assisted creativity (Nyaboke, 2025). Such Emerging legal frameworks are still adapting to the integration of AI within healthcare and nursing researches. (Abdalla & Mousa, 2023). examples of legal implication of using Alin Nursing researches is the consideration intellectual property rights (IPR) , with uncertainties about who holds authorship of AI-generated contributions. As Researchers have to follow copyright laws and the terms of service associated with AI platforms, each author has to double check the authorship of any data, not only rely on it without having a scientific origin for the data. (Nyaboke, 2024)

Intellectual property rights are governed by national and international law and practice. Therefore, researchers using AI as a source in their manuscript writing should consider internal and international laws regulating their work, including copyright protection, privacy, confidentiality protection, and personal property protection protecting intellectual property rights is not limited to one individual copyright but usually involves protecting the rights and interests of all members connected to the data and published research. (khalif et.al 2023). Therefore, users of some AI tools should not rely on the service to engage in any activity that infringes upon the intellectual property rights of others, including but not limited to copyright, trademark, or privacy infringement Nevertheless, where data or published research is concerned

Institutions are increasingly advocating for clear legal guidance and regular policy reviews to prevent violations of author rights. For researchers seeking to build a robust understanding of these legal challenges. () Cairo university has a leading role in Egypt by publishing a clear and concise guide that govern the use of AI entitled “Guide for controls on the use of Alin higher education and scientific research” in September 2025, that illustrate to researchers and students the framework to work through AI tools

LIMITATIONS OF USING AI APPLICATIONS

While AI tools provide researchers with many help such as saving time, efforts and improve research outcomes, as well as significant advantages in data analysis, literature review, and decision support across various scientific disciplines. There are still many limitations that must be addressed and more strict regulatory policies that need to be developed before AI can be fully integrated within the research community (Nurmi& Ueda, 2023). In regard to accuracy, AI tools do not ensure whether the information it provides is correct or not. AI can be wrong in multiple ways, such as giving a wrong or misleading answer, or omitting information by mistake specially it depends on generated Ideas. The goal of some AI when it receives a prompt is to generate what it thinks is the most likely string of words to answer that prompt. In some cases it cannot accurately produce its sources in which it can make up completely fake people, events, and articles, which is called hallucination (waly 2024).

Limitations of AI tools is not only related to AI overuse, but also misuse can occurs where datasets that are poorly chosen can lead to the development of biased opinions. The user can use *indirect prompt injections*, such as hidden instructions on a web page, to make an AI system steal data, manipulate a resume, or run code remotely on a machine. Indirect prompt injections have been ranked as the top vulnerability for Ai applications. Regarding costs, many generative AI tools are free to use, which is one reason for their popularity. However, no one seems to know how long free will last. At least two pricing models exist among those generative AI tools that are not free to use: subscription-based, which can be monthly, semi-annual, or annua pay (Waly, 2024). Additionally, some AI tools may allow the creators to sell and profit from researchers' personal information. (Ravi, 2025). Lastly, Many common generative AI tools are not connected to the internet and cannot update or verify the content they generate. Also, many tools are

trained on data with cutoff dates, resulting in outdated information or the inability to provide answers about current information and events. (the library of san JAC, 2025).

CONCLUSION

AI is crucial tool for Nursing researches, the nurse researcher should acquire enough knowledge to be able to use the AI tools , it allows feasibility of researches, and a time consuming tool in addition it help to generate mind-maps and organize the research data, it support the researcher by categorizing data and analysis of data, it support academic writing and help to detect plagiarism , it also help in data collection if the research to be conducted in healthcare field with a sample of patients with certain disease condition

Researcher should be aware of the pitfalls of AI applications from legal and ethical perspectives specially respecting patient privacy of information, and also the legality of the data sources acquired from the AI as sometimes AI data has no clear reference or authorship in addition to the copyrights and originality of information retrieved.

RECOMMENDATION

- Workshops to researchers about different uses of AI tools of to support the research Journey
- Researchers should be careful while using AI as they may violate copyrights and be subject to legal penalties
- Awareness campaigns about benefits and disadvantages of using AI to both authors and institutions
- Academic institutions and universities should have a clear law and policies that govern the right conduct of using AI in Researches.

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