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Original Article

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# Nurses' knowledge, attitude, and practice regarding sexual health care for cancer patients: a systematic review

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**ABSTRACT**

**Introduction:** Cancer and its treatments negatively affect patient sexual health. However, this aspect is often neglected in cancer care. As holistic care providers, nurses have a pivotal role in addressing their patient's sexual health problems. This study aims to summarize what is currently known about nurses' knowledge, attitude, and practice when helping cancer patients with concerns regarding their sexual health and recent educational strategies to enhance the nurses' competencies in relation to cancer patients' sexual healthcare.

**Methods:** The authors conducted a systematic review using PRISMA 2020 Guidelines. The articles were derived from five electronic databases (Scopus, Science Direct, ProQuest, MEDLINE, and PubMed), consisting of full text original research articles published between 2015 and 2024 using quantitative, qualitative or mixed methods. Review articles, books, and book chapters are excluded.

**Results:** The initial search resulted in 1,126 articles. Thirteen articles that met the selection criteria were included due to having good methodological quality. The nurses' knowledge, attitude, and practice toward sexual healthcare was found to be moderate. Nurses argued that they need specific knowledge and skills to confidently address sexuality problems among their patients. Educational interventions were effective at helping to improve the nurses' knowledge, attitude, and skills on sexual health care provision.

**Conclusions:** Institutional and educational support are important factors for mastering the nurses' ability to provide comprehensive sexual healthcare. A clear policy, sufficient facilities and comprehensive strategies are needed to mediate consistent cancer patient sexual healthcare provisions.

**Keywords:** attitude; cancer; knowledge; nurses; practice; sexual

## Introduction

Cancer is the second leading cause of death worldwide, accounting for nearly 9.7 million deaths in 2022 (Bray *et al.*, 2024). There were nearly 20 million new cases of cancer in 2022, and the estimates suggest that approximately one in five men or women will experience cancer in their lifetime (Bray *et al.*, 2024; World Health Organization, 2024). Cancer patients experience disruptions in various aspects of their lives that affect their quality of life (QoL). Several studies have shown that cancer and its treatment can cause significant physical, emotional, sexual and social distress in patients, negatively affecting their QoL (Aitken and Hossan, 2022; Hauken et al., 2023; Islam et al., 2023; Prapa et al., 2021).

As holistic care providers, nurses play an important role in integrating physical, mental, emotional, spiritual, sexual, cultural, social, energy and environmental management and ways to promote health, improve wellbeing and realize human potential (Harrington, 2015). On the other hand, the majority of nurses do not implement a holistic approach to nursing care (Albaqawi *et al.*, 2021; Ambushe *et al.*, 2023). An extremely important but often neglected aspect, particularly in cancer care, is sexuality (Wang *et al.*, 2018; Albers *et al.*, 2020; Katz, Agrawal and Sirohi, 2022; Lehmann, Laan and den Oudsten, 2022; Faye, 2023; Franzoi *et al.*, 2024). Sexuality is a part of the human personality, while quality of life has a significant relationship with the interrelationship of the

physical, psychological and socio-cultural dimensions (Greenberg, Bruess and Conklin, 2016; Boyacıoğlu *et al.*, 2023; World Health Organization, 2024).

A previous systematic review was conducted to assess the competencies present among nurses engaging in sexual health care provision for cancer patients, and it was found that sexual healthcare in cancer care remains sub-optimal and challenging, due mainly to the nurses' assumptions and prejudices towards sexuality, a lack of professional confidence, and a complex healthcare system environment. The study included articles published between 2014 and 2016 (Papadopoulou *et al.*, 2019). Since 2019, updates to education and the training methods used have evolved rapidly, where education and training interventions related to sexuality have also adapted. This article summarizes the nurses' current knowledge, attitudes and practice, including the current effective learning strategies to improve nursing competence in managing the sexual concerns of cancer patients.

## Materials and Methods

This review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) 2020 guidelines (Page *et al.*, 2021). The PRISMA 2020 extended checklist is included as an appendix.

### Eligibility Criteria

The authors included studies involving nurse respondents caring for cancer patients, focused on their knowledge, attitudes and practices in the provision of sexual health care (SHC) for their patients. The authors also included studies that examined the nurses' preferred education methods and associated topics. The included research designs were observational studies, interventional studies, or qualitative studies published between 2015 and 2024. The authors excluded studies if the results were not specific to the knowledge, behaviors, perceptions, or practices of nurses on SHC.

### Information Sources and Search Strategy

The first author and second author searched for articles from five databases, consisting of Scopus, Science Direct, ProQuest, MEDLINE, and PubMed in July 2024. This was done using the search strategy protocol (Supplementary Table 3). The constraints applied to our analysis were limited to full-text articles published in English. The authors also searched through the references of the included studies to find more relevant research on the topic.

### Selection and Data Collection

After removing duplicates, two authors (first author and second author) independently screened the titles and abstracts of the articles, and a full-text review was carried out. Then, the first author and third author created an extraction table and then separately extracted the data that consisted of: (a) participant characteristics (i.e. sample size); (b) study design; (c) interventions (if any); (d) outcome measures (e.g. instruments); and (e) outcomes. Where there was a disagreement between two authors, the third author mediated to resolve the disagreement.

### Data Synthesis

Relevant information for the narrative synthesis of the results was collected from studies that met the eligibility criteria. The authors utilized an explanatory sequential design to integrate the data synthesis undertaken through various methods in this research. This approach allowed them to comprehend the quantitative data related to the nurses' knowledge, attitudes, and practices concerning SHC, while also gaining deeper insights from the qualitative data. After identifying statistical trends, the authors examined how qualitative information could enhance the understanding of the quantitative.

### Outcomes

This study covered the reported knowledge, attitudes, and practices related to SHC as put forward by nurses. This study has also summarized several educational interventions used to improve the nurses' competencies in SHC.

### Risk of Bias Assessment

The methodological quality of the included studies was assessed by the first and third authors using appropriate Joanna Briggs Institute (JBI) critical appraisal tools based on the study design. The JBI for Analytical Cross-Sectional Studies tool consisting of eight items was used to criticize the observational studies (Moola *et al.*, 2020); the 10-item JBI Critical Appraisal Checklist for Qualitative Research tool was used to assess the qualitative studies (Lockwood, Munn and Porritt, 2015); while the 9-item JBI Checklist for Quasi-experimental Studies tool was used to critique the quasi-experimental studies (Barker *et al.*, 2024). Each item of the tools had four possible responses (yes, no, unclear, or not applicable). The summary quality was reported as the percentage of all 'yes' answers divided by all applicable questions, ranging from 0 to 100%, with a higher JBI indicating better methodological quality. Despite no formal guidelines, the authors considered studies with a JBI score $\geq$ 80% to be methodologically robust. Disagreements between the authors' results were resolved by discussion to reach a consensus, facilitated by the second author.

## Results

There were 1,126 studies identified from five databases. After removing 176 duplicate articles, 961

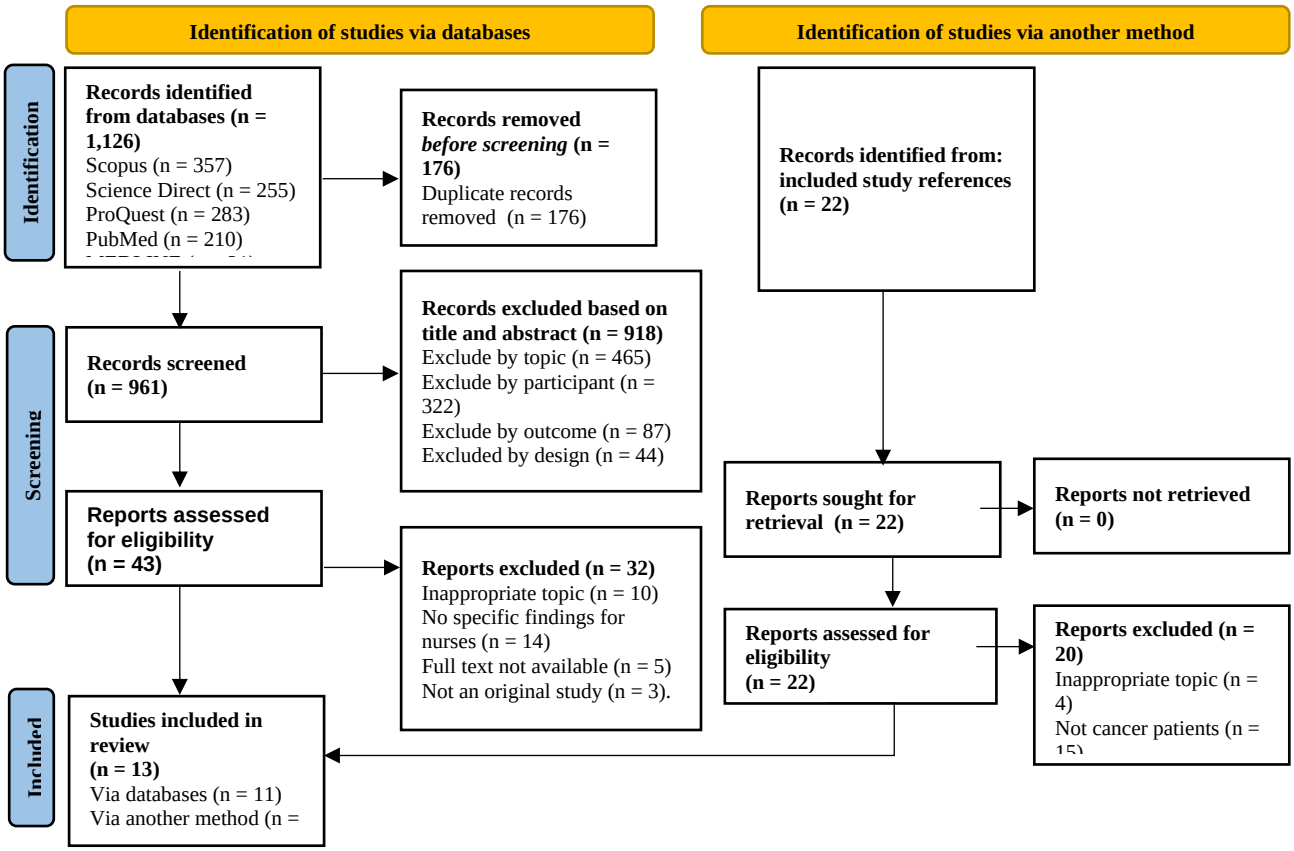


Figure 1. PRISMA Flow Diagram

studies were screened by the first author and third author for title/abstract. In total, 918 studies were excluded for the following reasons: excluded by topic, excluded by participant, excluded by outcome, and excluded by design. Next, the 43 studies were assessed for eligibility. In this step, 32 studies were excluded for being on inappropriate topics, no specific findings for nurses, the full text not being available and not being an original study. The search included looking for study references, and 22 studies were identified. Here, 20 studies were excluded for being on an inappropriate topic, not focusing on cancer patients, and being a review article. Finally, 13 studies met the selection criteria and were included. The whole process of study selection is illustrated in the PRISMA flowchart (Figure 1).

## Study Characteristics

The study characteristics are summarized in Table 1. Thirteen studies were published from 2015 to 2024, two studies were published in 2015 (Ferreira *et al.*, 2015; Krouwel *et al.*, 2015), two studies in 2017 (Afiyanti, 2017; Williams, Hauck and Bosco, 2017), two studies in 2019 (Annerstedt and Glasdam, 2019; Quinn *et al.*, 2019), three studies in 2020 (Ahn and Kim, 2020; Eid et al., 2020; Winterling et al., 2020), one study in 2022 (Tomioka *et al.*, 2022), two studies in 2023 (Paulsen, Vistad and Fegran, 2023; Xie *et al.*, 2023), and one study in 2024 (Mrad *et al.*, 2024). Five studies were observational (Afiyanti, 2017; Ahn and Kim, 2020; Krouwel et al., 2015; Tomioka et al., 2022; Xie et al., 2023), six were qualitative (Annerstedt and Glasdam, 2019; Ferreira et al., 2015; Mrad et al., 2024; Paulsen et al., 2023; Williams et al., 2017; Winterling et al., 2020), and two were quasi-experimental (Quinn *et al.*, 2019; Eid *et al.*, 2020). Based on research site, three studies originated from North America (Quinn *et al.*, 2019; Eid *et al.*, 2020; Mrad *et al.*, 2024), one study took place in South America (Ferreira *et al.*, 2015), one study was conducted in Oceania (Williams, Hauck and Bosco, 2017), four studies were conducted in Asia (Afiyanti, 2017; Ahn and Kim, 2020; Tomioka *et al.*, 2022; Xie *et al.*, 2023), and four studies were conducted in Europe (Annerstedt and Glasdam, 2019; Krouwel et al., 2015; Paulsen et al., 2023; Winterling et al., 2020).

## Risk of Bias Report

The authors' bias assessment started with the full-text screening to assess the components of each study according to the checklist. The included studies' quality was good overall, with scores ranging from 60 to 100 (Supplementary table). The two qualitative studies scored 60 (Winterling, Lampic and Wettergren, 2020) and 70 (Mrad *et al.*, 2024). The risk of bias in the two qualitative studies (Winterling, Lampic and Wettergren, 2020; Mrad *et al.*, 2024) was found to be due to either a lack of theoretical framework, no description of the researcher's influences, no report flow, or no description of ethical considerations. One quasi-experimental study scored 75 (Quinn *et al.*, 2019) and was found to have measurement bias and selection and allocation bias.

Table 1. Description of the included studies

| No. | Author | Study Design | Country | Participants | Instrument/Data Collection |
|---|---|---|---|---|---|
| 1 | Afiyanti (2017) | Cross-sectional | Indonesia | 135 oncology nurses | SABS |
| 2 | Ahn and Kim (2020) | Cross-sectional | South Korea | 70 oncology nurses | The SHC Scale-Attitude and The SHC Scale-Practice |
| 3 | Annerstedt and Glasdam (2019) | Qualitative study | Sweden | 7 nurses | Semi-structured interviews |
| 4 | Eid *et al.* (2020) | Quasi-experimental | USA | 65 nurses | Author-generated questionnaire |
| 5 | Ferreira *et al.* (2015) | Qualitative study | Brazil | 16 nurses | Semi-structured interviews |
| 6 | Krouwel *et al.* (2015) | Cross-sectional | Netherlands | 477 oncology nurses | SABS |
| 7 | Mrad *et al.* (2024) | Qualitative study | Canada | 11 oncology nurses | Semi-structured interviews |
| 8 | Paulsen, Vistad and Fegran (2023) | Qualitative study | Norway | 10 nurses | Semi-structured interviews |
| 9 | Quinn *et al.* (2019) | Quasi-experimental | USA | 233 nurses | Author-generated questionnaire |
| 10 | Tomioka *et al.* (2022) | Cross-sectional | Japan | 865 nurses | Questionnaire support for sexual and reproductive issues |
| 11 | Williams, Hauck and Bosco (2017) | Qualitative study | Australia | 17 nurses | Semi-structured interviews |
| 12 | Winterling, Lampic and Wettergren (2020) | Qualitative study | Sweden | 140 nurses and teachers | Oral or written feedback |
| 13 | Xie *et al.* (2023) | Cross-sectional | China | 2.530 oncology nurses | SHC, NCCCS, NPVS, GSES questionnaire |

SABS: Sexuality Attitudes and Beliefs Survey; SHC: sexual health care; NCCCS: Nurses' Clinic Communication Competency Scale; NPVS: Nurses Professional Values Scale; GSES: General Self-Efficacy Scale; AYA: adolescent and young adult; ENRICH

### Nurses' Knowledge, Attitude, and Practice on Providing SHC for Cancer Patients

The selected articles showed that the nurses' knowledge, attitudes and practices for SHC were moderate (Ahn and Kim, 2020; Xie *et al.*, 2023). They understood that the patients' sexuality is affected by their cancer and its treatments. The nurses also perceived that addressing their patients' sexual concerns is a nursing responsibility. In relation to attitudes, nurses also consider sexuality to be a sensitive and delicate issue, taboo, and that the topic is too private (Afiyanti, 2017; Ahn and Kim, 2020; Krouwel et al., 2015). Nurses have realized that their patients expect nurses to ask about sexual concerns but they did not feel comfortable discussing intimate matters in the hospital setting (Ferreira *et al.*, 2015; Afiyanti, 2017). In practice, only a third of nurses routinely discussed sexual function with their cancer patients (Krouwel *et al.*, 2015). Most nurses believed that patients with cancer were too ill to be interested in sexual matters and that SHC was not a priority in nursing care (Afiyanti, 2017; Annerstedt and Glasdam, 2019).

### Educational Strategies to Enhance the Nurses' Competencies for Cancer Patients' SHC

Educational interventions have shown positive outcomes regarding sexual concerns and helped nurses to challenge their discomfort in communicating about sexuality, as well as enabling them to find strategies to overcome external barriers (Quinn *et al.*, 2019; Eid *et al.*, 2020; Winterling, Lampic and Wettergren, 2020; Mrad *et al.*, 2024). The nurses reported that internal and external factors influenced their attitudes and practices towards sexual healthcare (Afiyanti, 2017; Ahn and Kim, 2020; Krouwel et al., 2015; Tomioka et al., 2022; Williams et al., 2017). Furthermore, nurses reported that a trusting relationship is key to facilitating conversations around sexual health issues (Williams, Hauck and Bosco, 2017; Paulsen, Vistad and Fegran, 2023). The nurses also argued that they need knowledge about changes in sexual function, safe sex and intimacy alternatives during treatment, fertility concerns and skills regarding sexual counselling approaches (Ahn and Kim, 2020; Winterling et al., 2020). The educational intervention methods included online training (Quinn *et al.*, 2019; Mrad *et al.*, 2024), offline workshops (Eid *et al.*, 2020), and a combination of approaches (Winterling, Lampic and Wettergren, 2020).

## Discussions

This systematic review encompassed 13 articles and has summarized what is currently known about the nurses' knowledge, attitudes, practice, and educational strategy regarding sexual health, especially for cancer patients. Previous systematic reviews have studied the competence of nurses when delivering SHC to patients (Papadopoulou *et al.*, 2019). However, in 2019, the world suffered from the COVID-19 pandemic which also changed the education and training methods used. This meant that the authors also evaluated the current effective educational interventions used to improve the nurses' competencies to develop sexual health programs for cancer patients. This systematic review found evidence that nurses have inadequate knowledge, attitudes and practices when it comes to addressing the sexual concerns of cancer patients.

The nurses' knowledge of sexual health, especially for patients with cancer, is inadequate in many countries due to various internal and external factors. Nurses understand that the discussion of SHC is their responsibility and that a trusting relationship is key to facilitating such a discussion but they are aware that they do not have sufficient knowledge about sexuality. They need knowledge about sexual function changes, safe sex during a range of treatments, fertility concerns, and skills related to sexual counselling approaches (Ahn and Kim, 2020; Krouwel et al., 2015). The nurses' knowledge level regarding SHC is at a moderate level (Xie *et al.*, 2023) but SHC has not been a priority in nursing education. A study in South Korea found that only 6% of nurses were educated about SHC (Ahn and Kim, 2020). In fact, education about SHC can increase their knowledge and help them to overcome various obstacles when solving the sexual problems of cancer patients (Afiyanti, 2017; Eid *et al.*, 2020). In addition, the instrument for measuring SHC knowledge in nurses has not yet been standardized. Therefore, it is necessary to develop an instrument to be able to produce a description of the nurses' knowledge about SHC which has implications related to the need for SHC education for nurses.

Nurses have good attitudes towards SHC. Through caring, nurses have empathy and understand that holistic care is important in their role, especially for cancer patients. Three studies supported the nurses' positive attitudes towards SHC. The majority of nurses believe that caring for their patients' sexual concerns is a nursing responsibility (Krouwel et al., 2015; Afiyanti, 2017; Suzanna, Nurjannah and Hartini, 2020; Aaberg et al., 2023). Based on a cross-sectional study, nurses scored the highest for attitudes towards SHC in cancer patients compared to the knowledge and practice domains (Xie *et al.*, 2023). These findings suggest that nurses have an adequate attitudinal base to manage their patients' sexual problems. However, the nurses had a strong attitude that discussing sexuality is taboo, that the topic is too private, and how the nurses display hesitation when intervening in sexual matters, which negatively affects the SHC provision in patients with cancer (Ferreira *et al.*, 2015; Afiyanti, 2017; Tomioka *et al.*, 2022; Paulsen, Vistad and Fegran, 2023). Furthermore, nurses realize that their patients want nurses to ask about their sexual matters but they do not feel comfortable discussing intimate matters in the hospital setting (Ferreira *et al.*, 2015; Afiyanti, 2017). The nurse's attitude is strongly influenced by her values and culture. To be able to improve the nurses' perceptions and openness when discussing the sexual aspects of cancer patients, nurses need to gain an understanding of these sexual aspects and their relation to the health and wellbeing of patients holistically.

Sexuality is an important component of human health. In Maslow's pyramid, sexuality ranks the lowest, indicating that sexuality is a basic need of every human being. Unfulfillment of the sexual aspect of the patient will affect the quality of his/her life. However, SHC practice is still very rare and often neglected, even though cancer patients experience various difficulties related to intimacy and sex. The patients' sexual health has low priority in the oncology clinic, according to the nurses' view (Annerstedt and Glasdam, 2019; Bingham et al., 2024; Reese et al., 2019; Sheppard et al., 2024). In practice, nurses and other healthcare workers focus on the patient's physical matters, therefore only one third of nurses routinely discussed sexual function with their cancer patients. The discussion mainly consisted of mentioning the side effects of treatment and how that affects sexual function (Krouwel *et al.*, 2015; Dickstein *et al.*, 2023; Bingham, Cassells and Semple, 2024). Unfortunately, the communication of sexual health is often carried out only by giving patients a general information booklet about sexual health (Annerstedt and Glasdam, 2019). This finding is in accordance with an article that found that nurses perceived there to be inadequate support systems for sexual and reproductive functioning in cancer patients (Tomioka *et al.*, 2022; Bingham, Cassells and Semple, 2024). It is important to maximize support from stakeholders and other professionals when implementing sexual health services for cancer patients. The provision of guidelines in SHC for patients with cancer, the fulfillment of appropriate room facilities to conduct SHC education and services, and continuing education should be the main programs in developing SHC care practices in cancer patients.

Cancer patients usually visit health services for both screening and cancer treatment. This condition provides a high frequency of nurse-patient encounters and strengthens the quality of the nurse-patient relationship. Studies show that nurses reported that a good, therapeutic nurse-patient relationship was an important basis for sexual health discussions, and that a trusting relationship was key to catalyzing conversation of psychosexual issues (Williams, Hauck and Bosco, 2017; Paulsen, Vistad and Fegran, 2023). The nurses' professional values, clinical communication competence and self-efficacy were positively associated with the knowledge and attitudes towards providing SHC (Xie *et al.*, 2023). In other words, a good nurse-patient relationship can improve nurses' confidence in caring for cancer patients' sexual health.

Although nurses have the power to connect with patients and facilitate the implementation of sexual health services, various barriers hinder the nurses' practice in managing the sexual wellness of cancer patients. Studies show that the nurses' personality and beliefs, institutional policies, the advanced age of patients, and different language/ethnicity and environmental factors influence nurses when it comes to taking responsibility for patients' sexual health (Afiyanti,

2017; Ahn and Kim, 2020; Krouwel et al., 2015; Tomioka et al., 2022). In addition, organizational culture, such as staff turnover, negatively affects the relationship with patients, making it impossible to raise the issue of sexuality. There is no angle or motive to ask questions related to sexual concerns, leaving nurses at a loss to initiate such conversations (Krouwel *et al.*, 2015; Rasool *et al.*, 2021). These factors make nurses reluctant to initiate conversations about sexual health and, as a result, care is not provided.

Institutional policy also seems to be an important factor in providing SHC. High nurse-to-patient ratios and institutional models of care have a significant impact on the nurses' attitudes and practices towards sexual health services. Evidence shows that high patient-to-nurse ratios mean that nurses do not have time to discuss sexuality (Ferreira *et al.*, 2015; Suzanna, Nurjannah and Hartini, 2020; Bingham, Cassells and Semple, 2024). In addition, nurses perceive that health institutions adopt care practices based on the biomedical model and consider life preservation, meaning that nurses do not recognize other aspects of care and deny the holistic nature of patients (Annerstedt and Glasdam, 2019; Ferreira et al., 2015). This suggests that institutional change is a key aspect when implementing sexual health provision for cancer patients.

Several studies on sexual health learning strategies have been developed and tested. Due to the COVID-19 pandemic, which required people to minimize contact with others, distance learning methods are an alternative, inclusive of sexual health education for nurses. Training strategies that combine lectures, individual learning, presentations, videos, role-plays and simulations, workshops and study groups have been found to be effective at improving nurses' knowledge, attitudes, and behaviors of sexuality care for cancer patients (Quinn *et al.*, 2019; Eid *et al.*, 2020; Winterling, Lampic and Wettergren, 2020). Furthermore, nurses reported that the course not only increased their confidence, communication skills and awareness of cancer patients' sexual concerns but also reduced their discomfort in the caring for cancer patients' sexual health (Quinn *et al.*, 2019; Mrad *et al.*, 2024). Thus, when providing sexual health education in healthcare settings, these methods can be combined to achieve good results. Adult learning theory can be used as a basis for developing educational strategies that are engaging, tailored and efficient. A combination of self-directed learning and face-to-face workshops would be a good strategy to improve nurses' knowledge and skills in providing SHC.

The strength of this systematic review was that the findings of both the qualitative and quantitative studies can corroborate each other, thus avoiding subjective findings and reducing the contextual factors that may cause bias. However, this review has limitations including the various potential biases related to sample size, participant-reported data, measurement challenges, and methodological challenges. Moreover, the heterogeneity of the studies in terms of research methods and outcome measures makes it difficult to synthesize the findings. Further contextually relevant primary research may be needed to gain a more comprehensive understanding of the nurses' knowledge, attitudes and practice of SHC for cancer patients. In addition, regular updates and the adaptation of systematic reviews can help to ensure that the findings remain relevant and applicable to the current healthcare landscape.

## Conclusion

This systematic review found that structured development is needed to increase the healthcare prioritization of SHC and to increase attention to SHC as an important need for cancer patients. The nurses' knowledge of SHC needs to be further assessed using standardized instruments to be applied in different countries. Institutional values need to be developed to increase the understanding that SHC is as important as physical and psychological health. The practice of SHC needs to be supported continuously so then it can become part of the culture and is no longer considered taboo by patients, nurses, and other healthcare providers. Comprehensive education through a combination of self-directed learning and ongoing face-to-face workshops is an attractive and effective alternative educational strategy. This study also highlighted the need for targeted educational interventions and the development of clear guidelines and protocols to increase nurses' knowledge, to improve their attitudes and to facilitate more consistent SHC practices for cancer patients.

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## Availability of data and materials

The authors hereby confirm that the data supporting the findings of this study are available within the article and its supplementary materials. Furthermore, raw data that underpin these findings can be obtained from the corresponding author upon reasonable request.

## Authors' contributions

I.A.M.V.S and YA originated the concept, which was subsequently discussed with L.O.A.R. All authors collaboratively determined the primary focus and key themes of this paper. I.A.M.V.S and YA undertook the research, screening, and review of the article. Data extraction was performed by I.A.M.V.S and L.O.A.R, while YA provided supervision for the project. Ultimately, all authors contributed to the writing of the manuscript.

## Declaration of Interest

The authors declare that there are no conflicts of interest in this study.

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Table 2. Outcomes of the Extracted Data

| No. | Author | Knowledge | Attitude | Practice | Description of the Educational Intervention |
|---|---|---|---|---|---|
| 1 | Afiyanti (2017) | A continuous educational program with regards to sexuality issues is necessary to overcome the barriers present. | Nurses faced barriers when assisting cancer patients in managing their sexual problems. | N/A | N/A |
| 2 | Ahn and Kim (2020) | The educational needs reported by participants were broadly related to two domains, knowledge and skill in the practice setting. | Nurses agreed that it was their responsibility to discuss SHC with cancer patients. | N/A | N/A |
| 3 | Annerstedt and Glasdam (2019) | N/A | The patients' sexual health had a low priority in the oncological clinic from the perspective of the nurses. | Nurses articulated that conversations about sexual health often took place by handing out standard information brochures about sexual health to patients. | N/A |
| 4 | Eid *et al.* (2020) | The nurses who participated in the sexual health education workshop reported significantly higher self-reported knowledge of sexual health. | Nurses who participated in the sexual health education workshop reported reduced barriers to discussing sexuality with patients. | N/A | A renowned clinician in oncology sexuality provided role-playing education to 14 oncology managers, supervisors, and charge nurses (being educators for the workshop). Oncology nurses participated in the four-hour sexuality education workshop (combination of presentations, discussions, and role-play). |
| 5 | Ferreira *et al.* (2015) | N/A | Nurses perceive that the health institution biomedical model means that nurses do not recognize other aspects of care and denies the holistic nature of their patients. The organizational culture, such as staff turnover, interferes negatively with bonding with the patients. | N/A | N/A |
| 6 | Krouwel *et al.* (2015) | The majority of nurses believed it was their responsibility, as well as that of the oncologist, to provide sexual function counselling. The strongest barriers to discussing SF found in this study were a lack of training. | N/A | A third of oncology nurses enquire routinely about sexual function, depending on the patient's age and the type of treatment (curative vs. life-prolonging vs. palliative treatment). | |
| 7 | Mrad *et al.* (2024) | N/A | N/A | N/A | A training session was conducted on the Zoom platform, utilizing the National League for Nursing/Jeffries Simulation Framework to guide the development of high-realism clinical simulations. The simulation process consisted of three stages: pre-briefing, the scenario, and debriefing. |
| 8 | Paulsen, Vistad and Fegran (2023) | N/A | The nurses experienced the importance of having good, respectful nurse-patient relationships as the foundation for sexual health communication. The nurses gained professional confidence through experience on the knowledge, attitudes, and taboos that influence sexual health communication. | N/A | N/A |
| 9 | Quinn *et al.* (2019) | The intervention improved the overall rate | The web-based training was well received and the | N/A | Web-based education grounded in the Adult Learning Theory. |

| No. | Author | Knowledge | Attitude | Practice | Description of the Educational Intervention |
|---|---|---|---|---|---|
| | | of knowledge among nurses regarding reproductive issues across a variety of the domains (risk of infertility, fertility preservation options, current technologies, and sexual health). | reported results show that the oncology nurses had high rates of confidence discussing this topics as well as increased frequency after the intervention. | | Participants completed 8 module. Each module included a web-based lecture, course textbook readings, case studies, and an interview-based learning assignment. |
| 10 | Tomioka *et al.* (2022) | N/A | The majority of nurses recognized that the support system was insufficient for sexual and reproductive functions for AYA with cancer. The challenges in supporting it were the nurses' hesitation to intervene in sexual matters and an insufficient support system. | N/A | N/A |
| 11 | Williams, Hauck and Bosco (2017) | A trusting relationship was key to facilitating conversation around psychosexual issues. | Nurses are influenced by their personal and professional experiences and values. | N/A | N/A |
| 12 | Winterling, Lampic and Wettergren (2020) | N/A | The educational intervention (Fex-Talk) increased the nurses' awareness that sexuality and fertility are both important issues for cancer patients. | This educational intervention also helped them challenge their own discomfort when communicating about sexuality and they found strategies for overcoming external obstacles. | Intervention combined video related to sex and intimacy (13 minutes); lecture about the impact of cancer on both sexuality and fertility; role-plays concerning the initiation of conversations about fertility and sexuality; and a homework assignment, involving a single session lasting 2 hours. |
| 13 | Xie *et al.* (2023) | Inadequate communication skills, and a lack of self-awareness are difficulties that prevent oncology nurses from adhering to SHC values. | The scores for attitude were the highest among all dimensions. One possible reason for this finding is that despite the prevalence of barriers to discussing sexuality as reported by oncology providers, they all perceive it as part of their responsibility. | Self-efficacy was positively correlated to the practice dimensions of SHC. Practice coaching resources for healthcare professionals must be on the agenda. | N/A |