

RESEARCH

Open Access



Attitude of nurses towards palliative care and its associated factors in Ethiopia, systematic review and meta-analysis

Addisu Getie^{1*}, Manay Ayalneh², Tigabu Munye Aytenew³, Melaku Bimerew² and Adam Wondmieni²

Abstract

Introduction Palliative care significantly improves the distressing symptoms of patients, especially those with cancer, heart disease, renal disease, and liver disease. The need for palliative care is increasing worldwide due to the growing burden of chronic disease. Nurses with an unfavorable attitude towards palliative care cannot skillfully assess the patient's needs, do not communicate effectively, and do not address the patient's problems adequately. Therefore, this study was aimed to assess the nurse's level of attitude towards palliative care in Ethiopia.

Methods Several databases were searched to find available articles. Microsoft Excel was used to extract and sort the data before it was exported to STATA/MP 17.0 for analysis. A weighted inverse variance random-effects model with a 95% confidence interval was employed to pool the data. Egger's test and Cochrane I^2 statistics were used to assess heterogeneity and publication bias, respectively. Subgroup analysis was carried out to identify the source of heterogeneity. A log-odds ratio was employed to show the relationship between nurses' level of attitude towards palliative care and its related factors. *P*-value less than 0.05 was considered statistically significant.

Result In Ethiopia, the pooled prevalence of favorable attitudes of nurses towards palliative care was 66.13% (95% CI: 54.00–78.27). The highest percentage of favorable attitudes towards palliative care among nurses was found in research studies done in Addis Ababa (80.31%; 95% CI: 72.00–88.63). Training on palliative care was significantly associated with the level of a nurse's attitude towards palliative care. Therefore, nurses who received palliative care training had a 2.5 times higher chance of having a favorable attitude towards palliative care than nurses who did not receive training on palliative care (AOR = 2.55; 95% CI: 2.28–2.82).

Conclusion One-third of nurses had unfavorable attitude towards palliative care. Nurses who took palliative care training had a more favorable attitude than nurses who did not take palliative care training. Routine palliative care training is needed for nurses to improve their level of attitude towards palliative care.

Keywords Attitude, Palliative care, Nurses, Ethiopia

*Correspondence:

Addisu Getie
addisu_getie@dmu.edu.et

¹Department of Nursing, College of Medicine and Health Sciences, Debre Markos University, Debre Markos, Ethiopia

²Department of Nursing, College of Medicine and Health Sciences, Injibara University, Injibara, Ethiopia

³Department of Nursing, College of Medicine and Health Sciences, Debre Tabour University, Debre Tabour, Ethiopia



© The Author(s) 2024. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated in a credit line to the data.

Introduction

The primary responsibilities of nurses are to provide holistic and humanistic care that takes into account the patient’s surroundings, body, and soul [1]. Palliative care is one kind of comprehensive and humanistic nursing treatment [2]. Based on a critical analysis of the available definitions, palliative care is the care of a person with a life-threatening or substantially life-limiting disease, requiring treatment of physical or mental symptoms resulting from the disease or its treatment, providing support in the area of social and spiritual needs, culture, and sexuality, aimed at alleviating suffering and optimizing the quality of life of the person and their relatives, carried out regardless of disease activity and the treatment modifying its course in its early stages, terminal phase, during the dying, and after the patient’s death concerning the relatives [3]. It is also a pain management strategy that improves the quality of life for people who are suffering from a serious disease. It covers any type of nursing care intended to decrease the severity of symptoms [4]. Palliative care significantly improves the distressing symptoms of patients, especially those with cancer, heart disease, renal disease, and liver disease [5].

Globally, palliative care is becoming more necessary due to the rising burden of chronic illnesses [6]. There is a rise in the incidence, prevalence, and death rate of chronic illness, along with comorbidities and long-term disability, worldwide [7]. The need for effective palliative care services may become more significant in low-income countries, including Ethiopia [8]. There are different barriers to accessing palliative care in low-income countries. These are lack of resources, ignorance of palliative care, reluctance of nurses to give palliative care, and an insufficient number of nurses who are responsible for providing palliative care [9].

Nurses are holistic treatment providers at different levels of care (primary care, secondary care, tertiary care, and quaternary care) and act as a link between professionals, patients, and their families, all of which improve the standard of care for each patient

[10]. They are crucial in delivering high-quality palliative care. The quality of palliative care is affected by nurses’ attitudes towards palliative care [11]. Nurses with a favorable attitude can decrease the suffering of patients and reduce their costs for hospitalization [12]. However, those nurses who have an unfavorable attitude are unable to communicate effectively, assess patients’ needs, and deal with their issues [13].

Previous studies showed that the percentages of nurses with favorable attitudes towards palliative care were 69.1% [14], 56.6% [15], 44.25% [16], and 53.41% [17]. The level of attitude among nurses may be influenced by different factors. These include experience, level of education, training on palliative care, knowledge about palliative care, and in-service training [18–20]. In Ethiopia, the issue of palliative care and the nurse’s level of attitude towards palliative care were not well discussed previously. Therefore, it is necessary to evaluate the attitude of nurses towards palliative care among Ethiopian nurses. Thus, this study is designed to evaluate nurses’ level of attitude towards palliative care in Ethiopia.

Methods

Study protocol

This systematic review and meta-analysis was conducted to evaluate the attitude of nurses towards palliative care and its associated factors in Ethiopia using the Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA) protocol for reporting findings (Table S1) [21].

Databases and searching strategies

In this systematic review and meta-analysis, several databases were searched. These include Google Scholar, Web of Science, African Journals Online (AJOL), HINARI, PubMed/MEDLINE, and EMBASE. In addition, unpublished articles from the repositories of Ethiopian universities were searched. The search terms were “attitude,” “feeling,” “perception,” “palliative care,” “end-of-life care,” “EOL,” “caring terminally ill,” “factors,” “associated factors,” “determinant factors,”

Table 1 Search of databases about Attitude of Nurses towards palliative care and its associated factors in Ethiopia

| Databases | Searching terms | Number of studies |
|--------------------------|---|-------------------|
| MEDLINE/ PubMed | “Attitude” OR “feeling” OR “perception” AND “palliative care” OR “PC” OR “EOL” OR “end of life care” OR “caring terminally ill” AND “factors” OR “associated factors” OR “determinant factors” AND “nurses” OR “hospital-based nurses” AND “Ethiopia” | 236 |
| Google Scholar | “Attitude” OR “feeling” OR “perception” AND “palliative care” OR “PC” OR “EOL” OR “end of life care” OR “caring terminally ill” AND “factors” OR “associated factors” OR “determinant factors” AND “nurses” OR “hospital-based nurses” AND “Ethiopia” | 10,700 |
| Other sources | “Attitude” OR “feeling” OR “perception” AND “palliative care” OR “PC” OR “EOL” OR “end of life care” OR “caring terminally ill” AND “factors” OR “associated factors” OR “determinant factors” AND “nurses” OR “hospital-based nurses” AND “Ethiopia” | 4 |
| Total retrieved articles | | 10,940 |
| Included studies | | 11 |

“nurses,” “hospital-based nurses,” and “Ethiopia.” “AND” and “OR” Boolean operators’ strings were used (Table 1).

Screening and eligibility of the studies

The retrieved articles were exported to EndNote Reference software version 8 (Thomson Reuters, Stamford, CT, USA) citation manager to sort and avoid possible duplications. Three investigators (AG, MA, and AW) independently evaluated each study by title and abstract using predetermined inclusion criteria. The first name of the authors, publication year, region where the study was conducted, sample size, study period, the attitude of nurses, and factors affecting nurses’ attitudes towards palliative care were extracted. Any discrepancies between the authors during the process of extraction, evaluation, and reviewing of the articles were resolved. All studies reporting

the level of attitude of nurses towards palliative care and its associated factors in Ethiopia, which were published until December 2023, were included. Articles that did not report outcome variables, qualitative studies, interventional studies, trials, case reports, news, and studies without full text were excluded from the analysis. Each author independently evaluates the eligibility of the articles.

Outcome measurement of the study

The outcomes of this study are the attitude of nurses towards palliative care and its associated factors. The attitude of nurses was measured by the mean score of the Frommelt Attitudes Towards Care of the Dying (FATCOD) scale. Then, the outcomes were categorized as a favorable attitude and unfavorable attitude. Those nurses who were scored mean and above of the FATCOD scale were considered as having a favorable

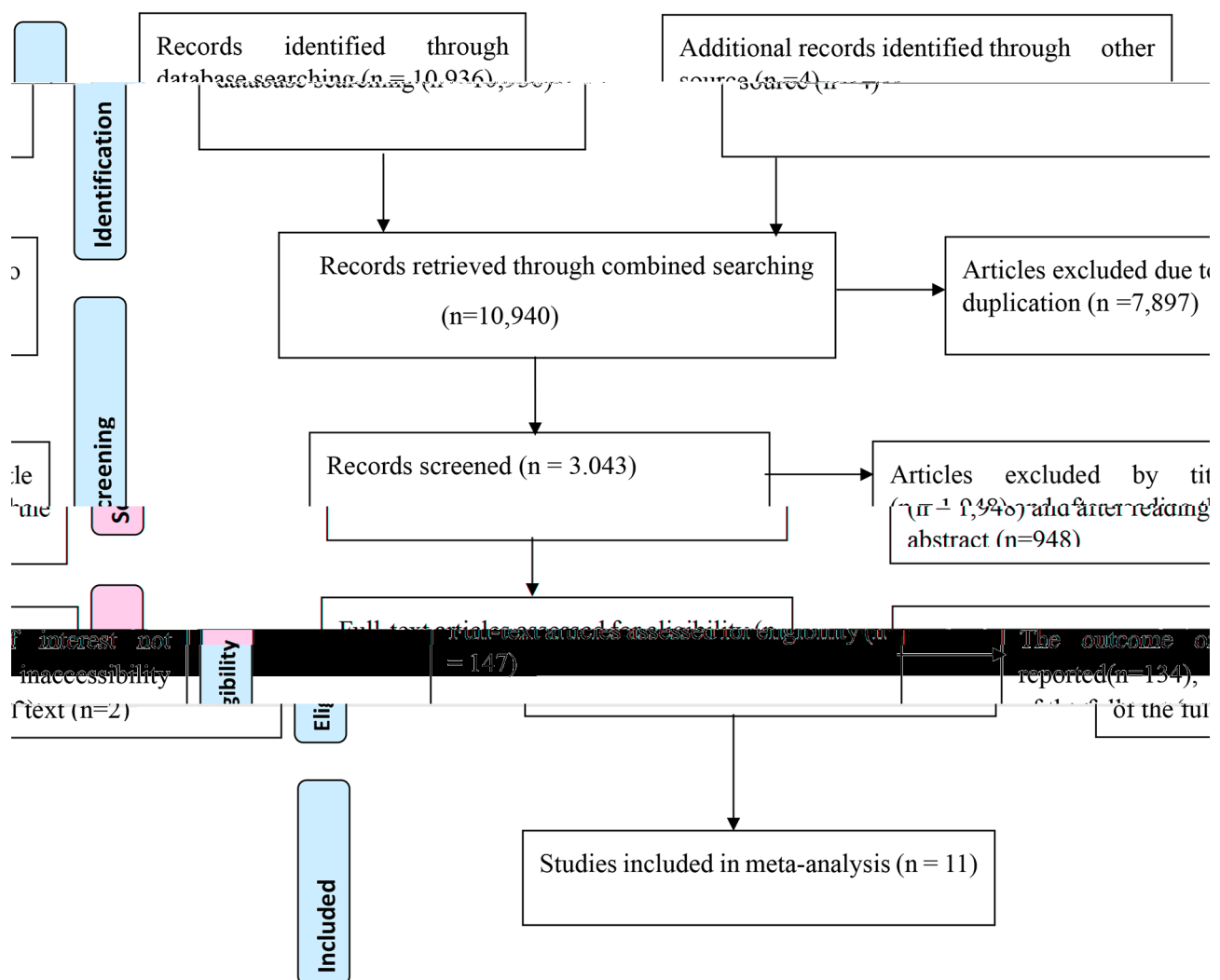


Fig. 1 Flow chart of selection articles done on attitude of nurses towards palliative care and its associated factors in Ethiopia

attitude, whereas nurses who were scored below the mean of the FATCOD scale were considered to have unfavorable attitude [22–24].

Quality assessment

Three authors, AG, MA, and AW, independently evaluated the quality of each study using the Newcastle Ottawa Scale (NOS) for cross-sectional studies [25]. The methodological quality, comparability, outcomes, and statistical analysis of the studies were the assessment tools used to declare the quality of studies. Studies scored on a scale of >7 out of 10 were considered as achieving high quality. All authors independently assessed the articles for consideration and inclusion in the final analysis.

Data processing and analysis

The data was extracted and cleaned using a Microsoft Excel spreadsheet. It was exported to STATA version 17 for analysis. The inverse variance random-effects model at 95% CI was used to weigh the pooled prevalence of nurses' attitudes towards palliative care and its associated factors in Ethiopia [26]. The Cochrane Q-test and I^2 with the correspondence p -value were used to evaluate the studies' heterogeneity [27]. Sub-group analysis was carried out by the study region to investigate the possible cause of heterogeneity. Sensitivity analysis was carried out to check the presence of

influential studies. Additionally, Egger's test was carried out to look for publication bias and displayed with a funnel plot [28]. A log odds ratio was used to determine the association between the associated factors and the nurse's level of attitude towards palliative care. A statistical test with a P -value of <0.05 was considered statistically significant.

Result

In this study, 10,940 articles were retrieved from different databases. Of these articles, 7,897 were excluded due to duplication. In addition, 2,896 articles were removed after reviewing the titles and abstracts of the studies. Furthermore, 134 articles were excluded that did not fulfil the inclusion criteria. Two articles were also excluded due to an inability to get the full text. Finally, eleven articles were included in the final analysis (Fig. 1).

Characteristics of the studies and study participants

This systematic review and meta-analysis covered eleven studies published up until December 2023, involving 3,468 study participants. From the included studies, four were from the Amhara region [16, 17, 29, 30], two from Addis Ababa city administration [31, 32], two from the Tigray region [33, 34] and three from the Oromia region [24, 35, 36]. All studies were

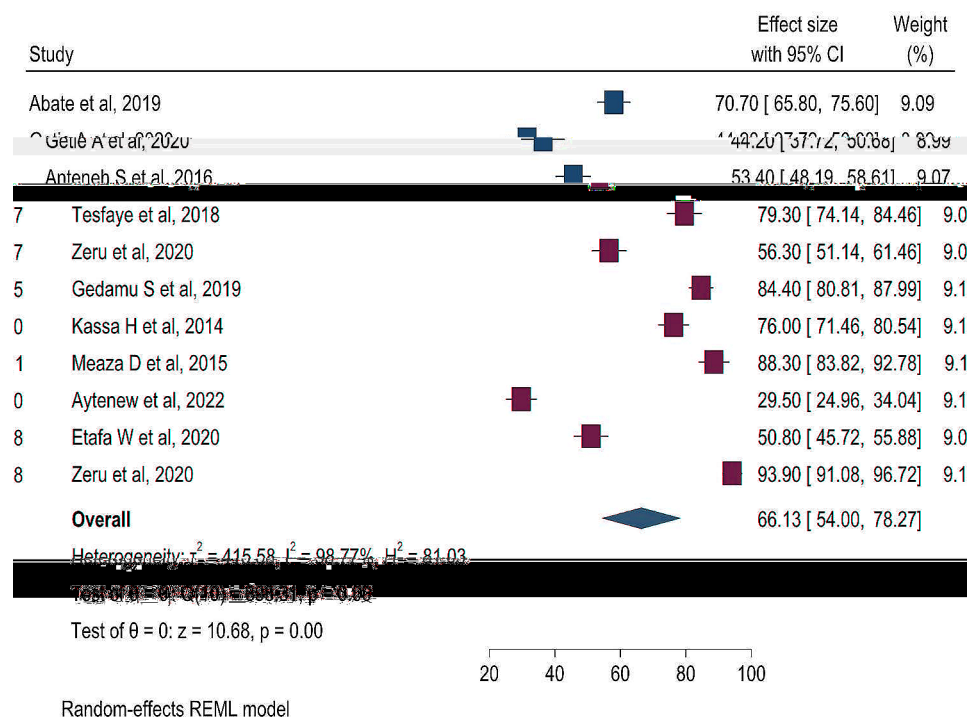


Fig. 2 Frost plot on the pooled prevalence of favorable attitude of nurses towards palliative care in Ethiopia

Table 2 Characteristics of studies and study participants on attitude of nurses towards palliative care and its associated factors in Ethiopia

| Author/Publication year | Region | Sample size | Favorable attitude (%) | Level of education (%) | | Work experience in year (%) | | | Experience in caring chronically ill patients (%) | | | | | Training on palliative care (%) | | Good knowledge about palliative care (%) |
|-------------------------|-------------|-------------|------------------------|------------------------|--------|-----------------------------|------|------|---|-----------|------------|----------|-------|---------------------------------|------|--|
| | | | | Diploma | Degree | < 5 | 5–10 | > 10 | Daily | Once/week | Once/month | Few/year | Never | Yes | No | |
| Abate et al., 2019 | Amhara | 331 | 70.7 | 13.6 | 86.4 | 69.5 | 23.3 | 7.3 | 46.2 | 23.6 | 14.5 | 1.2 | 14.5 | 18.7 | 81.3 | 38.97 |
| Getie A et al., 2020 | Amhara | 226 | 44.2 | 41.2 | 58.8 | 64.2 | 28.8 | 7.1 | 35.4 | 11.9 | 17.3 | 15.9 | 19.5 | 26.1 | 73.9 | 59.73 |
| Anteneh S et al., 2016 | Amhara | 352 | 53.4 | 42.0 | 58.0 | | | | | | | | | | | 53.13 |
| Tesfaye et al., 2018 | Oromia | 237 | 79.3 | 44.7 | 55.3 | | | | | | | | | | | 58.23 |
| Zeru et al., 2020 | Tigray | 355 | 56.3 | 47.6 | 52.4 | 38.3 | 29.6 | 32.1 | 46.5 | 22.3 | 4.8 | 11.3 | 15.2 | 75.2 | 24.8 | 62.82 |
| Gedamu S et al., 2019 | Addis Ababa | 392 | 84.4 | 14.5 | 85.5 | 64.0 | 24.7 | 11.2 | 69.1 | 14.3 | 4.6 | 9.4 | 2.6 | 28.6 | 71.4 | 26.53 |
| Kassa H et al., 2014 | Addis Ababa | 341 | 76.0 | 49.9 | 50.1 | 53.4 | 20.5 | 26.1 | 54.5 | 20.5 | 7.9 | 9.7 | 7.3 | 21.7 | 78.3 | 30.50 |
| Meaza D et al., 2015 | Oromia | 197 | 88.3 | | | 53.3 | 20.8 | 25.9 | | | | | | 29.4 | 70.6 | 55.84 |
| Aytenew et al., 2022 | Amhara | 387 | 29.5 | 37.5 | 62.5 | 56.8 | 33.6 | 9.6 | | | | | | | 100 | 21.45 |
| Etafa W et al., 2020 | Oromia | 372 | 50.8 | 18.5 | 81.5 | 52.7 | 34.1 | 13.2 | | | | | | | | 51.88 |
| Zeru et al., 2020 | Tigray | 278 | 93.9 | 43.2 | 56.8 | 43.2 | 27.0 | 29.9 | 41.4 | 22.3 | 7.9 | 9.0 | 0.0 | | | 25.18 |

cross-sectional in design and the sample size of the included studies was found in the range of 197–392 (Table 2).

Attitude of nurses towards palliative care

This systematic review and meta-analysis showed that, the pooled prevalence of favorable attitude of nurses towards palliative care in Ethiopia was 66.13% (95% CI: 54.00–78.27) (Fig. 2).

Heterogeneity and publication bias

In this systematic review and meta-analysis, there is a high heterogeneity within the studies (I^2 98.77%, $p < 0.001$). The Egger's test revealed a statistically significant result ($p = 0.015$), indicating the possibility of publication bias.

Sub-group analysis

Sub-group analysis was performed by the region where the studies were done to detect the source of heterogeneity. Research studies conducted in Addis Ababa revealed the highest percentage of favorable attitude of nurses towards palliative care in Ethiopia: 80.31% (95% CI: 72.00–88.63), where as the lowest was reported in Amhara region 49.45% (95% CI: 32.46–66.45) (Fig. 3).

Sensitivity analysis

A leave-one-point sensitivity analysis conducted using the random-effects model revealed that all of the points were estimates within the overall 95% confidence interval (54.00–78.27) indicating the absence of any influential study.

Work experience, level of education, experience on caring chronically ill patients and training on palliative care

In this study, the majority of nurses 55.06% (95% CI: 48.46–61.67) had less than five years of work experience. Nurses who had a BSc. degree were 64.87% (95% CI: 56.06, 73.67). Similarly, nurses who had a daily experience of caring chronically ill patients were 48.98% (95% CI: 39.50–58.40). In addition, 66.71% (95% CI: 48.73, 84.68) of nurses did not receive training on palliative care. Furthermore, 43.92% (95% CI: 34.62, 53.22) of nurses had good knowledge on palliative care (Table 3).

Factors associated with level of nurses attitude towards palliative care

The results of this systematic review and meta-analysis indicate a significant association between nurses' level of attitude towards palliative care and palliative care training. Then, nurses who had received palliative care training had a 2.5 times higher chance of having a favorable attitude towards palliative care than

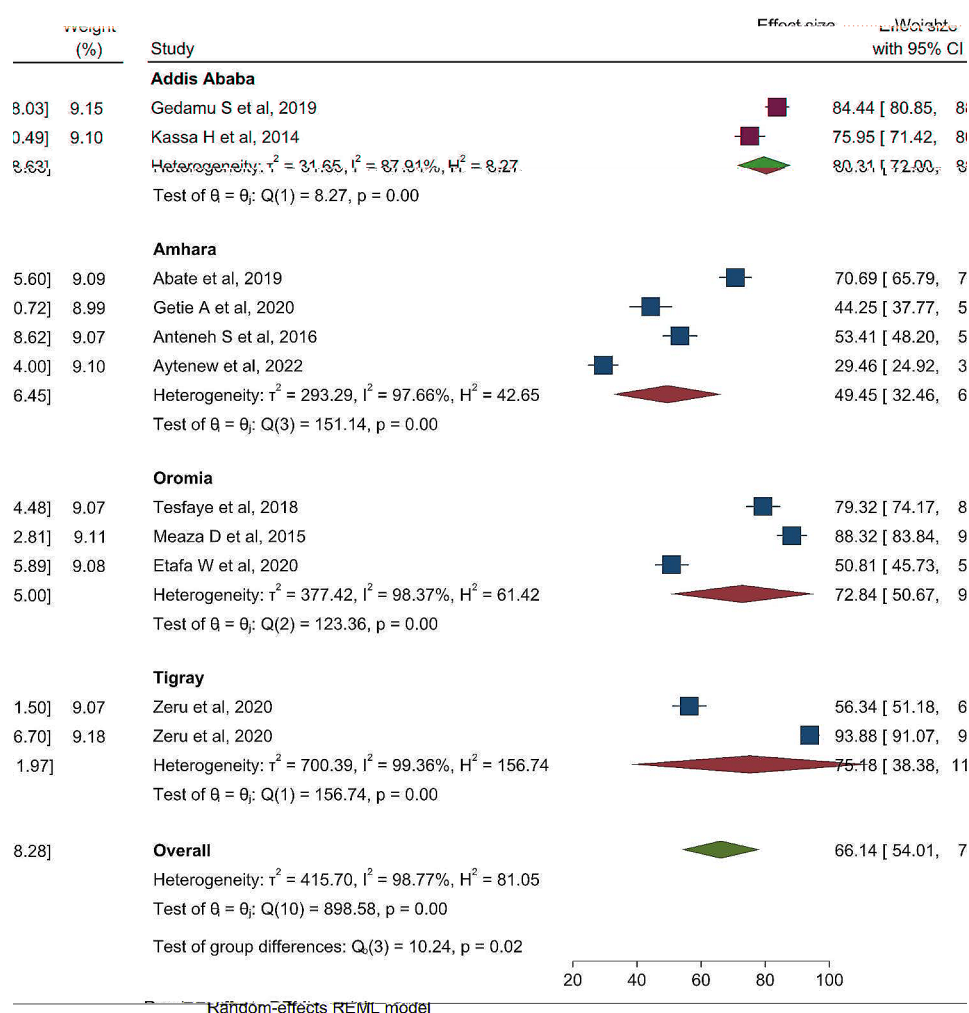


Fig. 3 Sub-group analysis by region on the pooled prevalence of favorable attitude of nurses towards palliative care in Ethiopia

Table 3 Work experience, level of education, experience on caring chronically ill patients, training on palliative care, and level of knowledge about palliative care among nurses working in Ethiopia

| Variables | Classifications | Studies | Prevalence (95%CI) | I ² (%) | P-value |
|---|------------------------|---------|---------------------|--------------------|---------|
| Work experience | Less than five years | 9 | 55.06 (48.46,61.67) | 92.66 | < 0.001 |
| | Five to ten years | 9 | 26.92 (23.59,30.24) | 76.33 | < 0.001 |
| | Greater than ten years | 9 | 17.84 (11.16,24.52) | 96.53 | < 0.001 |
| Level of education | Diploma | 10 | 35.13 (26.33,43.94) | 97.04 | < 0.001 |
| | BSc (degree) | 10 | 64.87 (56.06,73.67) | 97.07 | < 0.001 |
| Experience in caring chronically ill patients | Daily | 6 | 48.98 (39.50,58.40) | 94.64 | < 0.001 |
| | Once/week | 6 | 19.17 (15.31,23.02) | 96.43 | < 0.001 |
| | Once/month | 6 | 09.19 (05.18,13.21) | 91.22 | < 0.001 |
| | Few/year | 6 | 09.14 (05.25,13.02) | 91.67 | < 0.001 |
| | Never | 6 | 11.56 (05.59,17.53) | 91.67 | < 0.001 |
| Training on palliative care | Yes | 6 | 33.29 (15.32,51.27) | 98.80 | < 0.001 |
| | No | 6 | 66.71 (48.73,84.68) | 98.80 | < 0.001 |
| Level of knowledge on palliative care | Good knowledge | 11 | 43.92 (34.62,53.22) | 97.18 | < 0.001 |

nurses who did not receive palliative care training (AOR=2.55; 95% CI: 2.28–2.82) (Fig. 4).

Discussion

This systematic review and meta-analysis evaluate the level of nurses' attitudes towards palliative care in Ethiopia. The findings of this study showed that 66.13% (95% CI: 54.00–78.27) of nurses had a favorable attitude towards palliative care. Similar findings were reported in different countries: 56.6% in Sudan [15], 69.1% in Mongolia [14], 62.4% in Palestine [37], and 58.9% in Democratic Republic of Congo [38]. In this study, the level of favorable attitude of nurses towards palliative care was lower than studies conducted in Iran (81.8%) [39] and India (92.8%) [40]. This difference might be because of cultural differences related to giving care to dying patients and the difference in case flow. Previous studies were conducted in high-income countries, where nurses have more exposure to patients who need palliative care. This builds their level of attitude towards palliative care. It might also be due to the absence of curriculum education content about palliative care in Ethiopia. However, the level of favorable attitude of nurses in Ethiopia was higher than in a study done in Egypt (337.6% of nurses had a positive attitude towards palliative care) [41]). This discrepancy might be due to the differences in in-service training, knowledge about palliative care, formal palliative care education, and job satisfaction of nurses [16, 29].

In this systematic review and meta-analysis, there is a high heterogeneity within the studies ($I^2 = 98.77\%$, $p < 0.001$). To detect the possible source of heterogeneity, subgroup analysis by region was conducted. Research studies conducted in Addis Ababa revealed the highest percentage of favorable attitudes of nurses

towards palliative care: 80.31% (95% I: 72.00–88.63). This could be because of the difference in study settings; in Addis Ababa, nurses worked in specialized and referral hospitals, where nurses routinely encountered and managed patients in need of palliative care. In addition, nurses that were recruited in hospitals found in Addis Ababa had the chance to get training on palliative care. Therefore, frequent exposure to chronically and terminally ill patients and getting training in palliative care increase the development of a favorable attitude towards palliative care. This study found a significant association between nurses' level of attitude towards palliative care and palliative care training. Nurses who received palliative care training had 2.55 times higher odds of having a favorable attitude towards palliative care than nurses who did not receive palliative care training. One possible explanation is that well-trained nurses tend to have positive attitudes due to their strong expertise [33, 42, 43].

Strength and limitation of the study

This study highlights the nationwide picture of level of nurse's attitude towards palliative care in Ethiopia. It covers a wide area and investigates different articles, making the review more accurate. Subgroup and sensitivity analyses were carried out to investigate the heterogeneity of the included studies. However, studies whose study design cross-sectional were limit investigation of the cause–effect relationship.

Conclusion

In Ethiopia, two-thirds of nurses had a favorable attitude towards palliative care. There was regional variation regarding the level of nurses' attitude towards palliative care; the highest level of favorable attitude was reported among nurses who worked in Addis

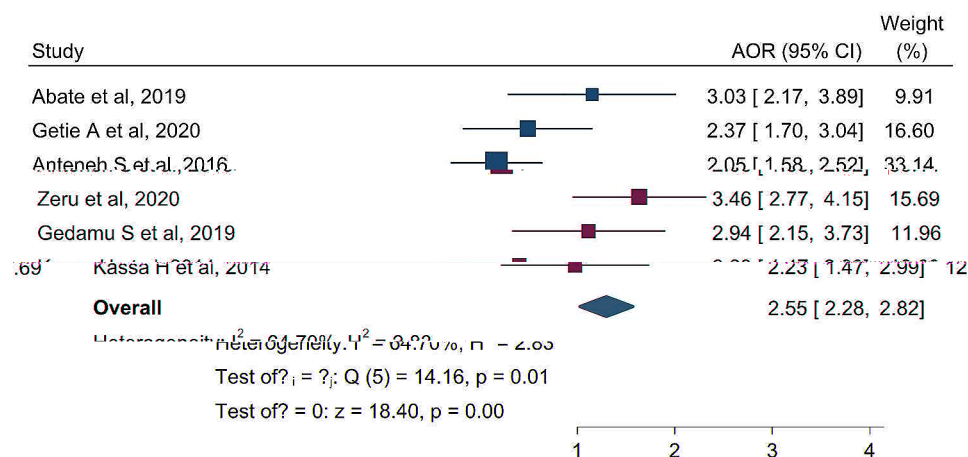


Fig. 4 The overall pooled odds ratio of the association between training on palliative care and nurses attitude towards palliative care in Ethiopia

Ababa, whereas the lowest was reported in the Amhara region. Palliative care training was significantly associated with nurses' level of attitude towards palliative care. Accordingly, the level of favorable attitude was higher among nurses who took palliative care training than among those who did not take palliative care training. Thus, palliative care training and improving nurses' careers through continuous professional development should be given regularly to nurses to improve their level of attitude towards palliative care.

Abbreviations

| | |
|--------|---|
| AJO | African Journals Online |
| AOR | Adjusted Odds Ratio |
| BSc | Bachelor of Science |
| CI | Confidence Interval |
| FATCOD | Frommelt Attitudes Toward Care of the Dying |
| NOS | Newcastle Ottawa Scale |
| PRISMA | Preferred Reporting Items for Systematic Review and Meta-analysis |

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12904-024-01402-w>.

Supplementary Material 1

Acknowledgements

Not applicable.

Author contributions

AG and MB designed the study, designed and run the literature search. All authors (AG, MA, TM, MB, and AW) acquired data, screened records, extracted data, and assessed the risk of bias. AG did the statistical analyses and wrote the report. All authors provided critical conceptual input, analyzed and interpreted the data, and critically revised the report. All authors read and approved the final manuscript.

Funding

Not applicable.

Data availability

All related data have been presented within the manuscript. The dataset supporting the conclusions of this article is available from the authors on request.

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Received: 30 December 2023 / Accepted: 28 February 2024

Published online: 08 March 2024

References

- Gale A. Preventing social isolation: a holistic approach to nursing interventions. *J PsychoSoc Nurs Ment Health Serv*. 2020;58(7):11–3.

- Borimnezhad L, Seyedfatemi N, Mardani Hamooleh M. Concept analysis of palliative care using Rodgers' evolutionary method. *Iran J Nurs*. 2014;26(86):1–15.
- Dzierżanowski T. Definitions of palliative care – narrative review and new proposal. *Medycyna Paliatywna/Palliative Med*. 2021;13(4):187–200. <https://doi.org/10.5114/pm.2021.114495>
- Parveen A, Sultana K, Waqas A, Tasneem S, Jabeen R. Knowledge and attitude of nurses about palliative care. *J Bioresource Manage*. 2020;7(1):8.
- Lopez-Acevedo M, Havrilesky LJ, Broadwater G, Kamal AH, Abernethy AP, Berchuck A, et al. Timing of end-of-life care discussion with performance on end-of-life quality indicators in ovarian cancer. *Gynecol Oncol*. 2013;130(1):156–61.
- Sleeman KE, De Brito M, Etkind S, Nkhoma K, Guo P, Higginson IJ, et al. The escalating global burden of serious health-related suffering: projections to 2060 by world regions, age groups, and health conditions. *Lancet Global Health*. 2019;7(7):e883–e92.
- Etkind SN, Bone AE, Gomes B, Lovell N, Evans CJ, Higginson IJ, et al. How many people will need palliative care in 2040? Past trends, future projections and implications for services. *BMC Med*. 2017;15(1):1–10.
- Challinor JM, Galassi AL, Al-Ruzzieh MA, Bigirimana JB, Buswell L, So WK, et al. Nursing's potential to address the growing cancer burden in low-and middle-income countries. *J Global Oncol*. 2016;2(3):154.
- Hawley P. Barriers to access to palliative care. *Palliat Care: Res Treat*. 2017;10:1178224216688887.
- Sekse RJT, Hunsbør I, Ellingsen S. The nurse's role in palliative care: a qualitative meta-synthesis. *J Clin Nurs*. 2018;27(1–2):e21–e38.
- Harden K, Price D, Duffy E, Galunas L, Rodgers C. Palliative care: improving nursing knowledge, attitudes, and behaviors. *Clin J Oncol Nurs*. 2017;21(5).
- May P, Normand C, Cassel JB, Del Fabbro E, Fine RL, Menz R, et al. Economics of palliative care for hospitalized adults with serious illness: a meta-analysis. *JAMA Intern Med*. 2018;178(6):820–9.
- Iranmanesh S, Razban F, Tirgari B, Zahra G. Nurses' knowledge about palliative care in Southeast Iran. *Palliat Support Care*. 2014;12(3):203–10.
- Kim JS, Kim J, Gelegjams D. Knowledge, attitude and self-efficacy towards palliative care among nurses in Mongolia: a cross-sectional descriptive study. *PLoS ONE*. 2020;15(7):e0236390.
- Bilal M. The knowledge of palliative care and the attitude toward it among the nurses at Sabia General Hospital 2018. *Sudan J Med Sci*. 2018;13(4):301–10.
- Getie A, Wondmieni A, Mengesha A, Fitwi A, Gedefaw G, Demis A. Assessment of knowledge and attitude towards palliative care and associated factors among nurses working in North Wollo hospitals. *Ethiop J Health Sci*. 2021;31(2).
- Anteneh S, Kassa H, Demeke T, Guadu T. Assessment of nurses' knowledge, attitude, practice and associated factors towards palliative care: in the case of Amhara region hospitals. *Adv Biol Res*. 2016;10(2):110–23.
- Årestedt K, Beattie JM, Kim S, Hwang WJ. Palliative care for those with heart failure: nurses' knowledge, attitude, and preparedness to practice. *Eur J Cardiovasc Nurs*. 2014;13(2):124–33.
- Fauziningtyas R, Widowati ER, Indarwati R, Asmoro CP. Determinants of knowledge and attitude related to palliative care nurses. *Int J Psychosocial Rehabilitation*. 2020;24(7):7554–62.
- Paknejadi F, Hasavari F, Khaleghdoost Mohammadi T, Kazemnejad Leili E. Nurses' knowledge of palliative care and its related factors. *J Holist Nurs Midwifery*. 2019;29(4):236–42.
- Moher D, Liberati A, Tetzlaff J, Altman DG, Group* P. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Ann Intern Med*. 2009;151(4):264–9.
- Kassa H, Murugan R, Zewdu F, Hailu M, Woldeyohannes D. Assessment of knowledge, attitude and practice and associated factors towards palliative care among nurses working in selected hospitals, Addis Ababa, Ethiopia. *BMC Palliat Care*. 2014;13(1):1–11.
- Gedamu S, Berhane E, Dires A, Anteneh S, Goshiye D, Tilahun L. Knowledge and attitude of nurses towards palliative care in government hospitals of Addis Ababa, Ethiopia. *J Nurs Care*. 2019;8(486):2.
- Tesfaye T, Anbesse Y, Gizaw AB. Palliative care practice and associated factors among nurses working in Jimma University Medical Center South-West Ethiopia, 2017. *Practice*. 2018;18:24.
- Peterson J, Welch V, Losos M, Tugwell P. The Newcastle-Ottawa scale (NOS) for assessing the quality of nonrandomised studies in meta-analyses. Ottawa: Ottawa Hospital Research Institute. 2011;2(1):1–12.

26. Borenstein M, Hedges LV, Higgins JP, Rothstein HR. A basic introduction to fixed-effect and random-effects models for meta-analysis. *Res Synthesis Methods*. 2010;1(2):97–111.
27. Rücker G, Schwarzer G, Carpenter JR, Schumacher M. Undue reliance on I² in assessing heterogeneity may mislead. *BMC Med Res Methodol*. 2008;8:1–9.
28. Egger M, Smith GD, Schneider M, Minder C. Bias in meta-analysis detected by a simple, graphical test. *BMJ*. 1997;315(7109):629–34.
29. Abate AT, Amdie FZ, Bayu NH, Gebeyehu D, G/Mariam T. Knowledge, attitude and associated factors towards end of life care among nurses' working in Amhara Referral hospitals, Northwest Ethiopia: a cross-sectional study. *BMC Res Notes*. 2019;12:1–8.
30. Tigabu Munye A, et al. Quality of palliative care practice and it's associated factors among nurses working in South Gondar Zone Public hospitals, Northwest Ethiopia: facility based cross-sectional study. *PAMJ - One Health*. 2022;9(17). <https://doi.org/10.11604/pamj-oh.2022.9.17.33900>
31. Kassa H, Murugan R, Zewdu F, Hailu M, Woldeyohannes D. Assessment of knowledge, attitude and practice and associated factors towards palliative care among nurses working in selected hospitals, Addis Ababa, Ethiopia. *BMC Palliat care*. 2014;13(1):6.
32. Gedamu S. Knowledge and attitude of nurses towards palliative care in government health hospitals of Addis Ababa, Ethiopia, 2016: Addis Ababa University; 2016.
33. Zeru T, Beriha H, Gerense H, Teklay G, Teklu T, Gebrehiwot H. Assessment of knowledge and attitude towards palliative care and associated factors among nurses working in selected Tigray hospitals, northern Ethiopia: a cross-sectional study. *Pan Afr Med J*. 2020;35.
34. Zeru T, Gerense H, Beriha H, Zeru M, Wubayehu T. Nurses practice towards palliative care in Shire Endasilasie health facilities, Northern Ethiopia: a cross-sectional study. *Pan Afr Med J*. 2020;35.
35. Etafa W, Wakuma B, Fetensa G, Tsegaye R, Abdisa E, Oluma A, et al. Nurses' knowledge about palliative care and attitude towards end-of-life care in public hospitals in Wollega zones: a multicenter cross-sectional study. *PLoS ONE*. 2020;15(10):e0238357.
36. Meaza D, Worku Z. Knowledge, attitude and practice of nurses towards palliative care in Harari national regional state, eastern Ethiopia. *Eur J Pub Health*. 2015;25(3):476–9.
37. Ayed A, Sayej S, Harazneh L, Fashafsheh I, Eqtait F. The nurses' knowledge and attitudes towards the palliative care. *Journal of Education and Practice*. 2015;6(4):91–9. 2021.
38. Mukemo AK, Kasongo NM, Nzaji MK, Tshamba HM, Mukengeshayi AN, Nikulu JI et al. Assessment of nurses' knowledge, attitude and associated factors towards palliative care in Lubumbashi's Hospitals.
39. Abdollahimohammad A, Firouzkouhi M, Amrollahimishvan F, Alimohammadi N. Nurses versus physicians' knowledge, attitude, and performance on care for the family members of dying patients. *Korean J Med Educ*. 2016;28(1):79.
40. Ekzayez A, Alhaj Ahmad Y, Alhaleb H, Checchi F. The impact of armed conflict on utilisation of health services in north-west Syria: an observational study. *Confl Health*. 2021;15(1):1–0.
41. Kefale B, Betero G, Temesgen G, Degu A. Management practice, and treatment outcome and its associated factors among hospitalized stroke patient at Ambo University Referral Hospital, Ethiopia: an institutional based cross sectional study. 2019.
42. Hao Y, Zhan L, Huang M, Cui X, Zhou Y, Xu E. Nurses' knowledge and attitudes towards palliative care and death: a learning intervention. *BMC Palliat care*. 2021;20:1–9.
43. Chen X, Zhang Y, Arber A, Huo X, Liu J, Sun C, et al. The training effects of a continuing education program on nurses' knowledge and attitudes to palliative care: a cross sectional study. *BMC Palliat Care*. 2022;21(1):56.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.