Addiction & Health

# A systematic review of knowledge and attitude of nurses towards substance use or users

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**Abstract**

**Background:** Substance use disorders (SUDs) lead to adverse outcomes in society. Among these, the role of nurses is very important in the management of patients with SUDs due to their greater relationship with them than other health care providers. This systematic review aimed to assess the nurses' knowledge about substance use and their attitude towards substance users.

**Methods:** In this systematic review, an extensive search was performed on online databases including PubMed, Web of Science, and Scopus using the relevant keywords, from the earliest to July 9, 2021. Published English studies related to the purpose of the present study were included. AXIS tool was used to assess the quality of the included studies.

**Findings:** A total of 3,273 nurses were enrolled in the twelve studies. The nurses' knowledge about substance use and their attitude towards substance users were relatively moderate and positive, respectively. Factors associated with knowledge included age, sex, and work experience. Also, age, sex, ethnicity, level of education, organizational position, work experience, a history of participating in workshops about substance use or users, interest in the care, total hours of substance use courses in school, and total hours of continuing education related to substance use were possible factors related to nurses' attitude.

**Conclusion:** Therefore, holding workshops and improvement of guidelines related to patient care with SUDs can be effective in enhancement of the knowledge and attitude of nurses and ultimately the quality of nursing care.

**Keywords:** Knowledge; Attitude; Nurses; Substance-related disorders; Systematic review.

## Introduction

A drug is a biological and artificial substance that is incorporated in a person to catalyze their action. [1] On the other hand, substance use disorders (SUDs) are complex disorders that have a significant impact on brain function and behavior. Ultimately, these disorders lead to adverse outcomes in society. [2-7] In the USA, the rate of drug overdose deaths in 2017 was 21.7 per 100,000 people and 20.7 per 100,000 people in 2018, which is the highest rate worldwide. [8] In addition, 67,367 opioid-related deaths were reported in the USA in 2018, which led to a loss of life expectancy of 0.36 years. [8, 9]

Meanwhile, the role of nurses is very important in the management of patients with SUDs due to their greater relationship with them than other health care providers. [10-12] Nurses need a high level of clinical competence, expertise, and skills to assess patients with SUDs. [13-15] Also, nurses need an appropriate level of knowledge and attitude towards substance use or users to properly manage patients with SUDs. However, the evidence in this area is contradictory. [16-18] A study in Ireland showed that nurses' level of knowledge towards substance use was desirable. [16] In contrast, a study in Wales showed that nurses' level of knowledge is insufficient. [18] On the other hand, nurses' attitudes can also be an important factor in their performance in caring for patients with SUDs. Hence, a study in Ireland [16] inconsistent with a study in Nigeria [17] showed that nurses' attitudes were positive.

Due to the importance of the role of nurses in the care of SUDs patients and the contradictory results of studies in this field, it is necessary to conduct a comprehensive review of the literature to assess the nurses' knowledge about substance use and their attitude towards substance users. Therefore, this systematic review aimed to assess the nurses' knowledge about substance use and their attitude towards substance users.

## Methods

This systematic review was conducted based on Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. [19] No ethical approval was sought for this systematic review.

**Search strategy**

As presented in Table 1, an extensive search was performed on online databases including PubMed, Web of Science, and Scopus using keywords such as "Knowledge", "Attitude", "Nurses", "Substance Use", "Substance Dependence", "Drug Users", and "Opium Dependence" from the earliest to July 9, 2021. For example, the search strategy in the PubMed/MEDLINE database was (“Knowledge” OR “Attitude”) AND (“Nurses”) AND (“Substance Use” OR “Substance Uses” OR “Use, Substance” OR “Drug Abuse” OR “Drug Dependence” OR “Dependence, Drug” OR “Drug Addiction” OR “Addiction, Drug” OR “Substance Use Disorders” OR “Disorder, Substance Use” OR “Substance Use Disorder” OR “Drug Use Disorders” OR “Addiction, Drug” OR “Disorder, Drug Use” OR “Drug Use Disorder” OR “Organic Mental Disorders, Substance-Induced” OR “Organic Mental Disorders, Substance Induced” OR “Addiction, Drug” OR “Substance Abuse” OR “Abuse, Substance” OR “Substance Abuses” OR “Substance Dependence” OR “Addiction, Drug” OR “Dependence, Substance” OR “Substance Addiction” OR “Addiction, Substance” OR “Prescription Drug Abuse” OR “Prescription Drug Abuse” OR “Abuse, Prescription Drug” OR “Drug Abuse, Prescription” OR “Drug Habituation” OR “Habituation, Drug” OR “Drug and Narcotic Control” OR “Psychoses, Alcoholic” OR “Psychoses, Alcoholic” OR “Psychoses, Alcoholic” OR “Illicit Drugs” OR “Designer Drugs” OR “Designer Drugs” OR “Codependency, Psychological” OR “Alcohol-Related Disorders” OR “Drug Overdose” OR “Alcohol-Induced Disorders” OR “Alcoholic Intoxication” OR “Alcoholism” OR “Amphetamine-Related Disorders” OR “Narcotic-Related Disorders” OR “Marijuana Abuse”

OR “Tobacco Use Disorder” OR “Cocaine-Related Disorders” OR “Opium” OR “Opiate” OR “Marijuana Use”). Keywords were extracted via MeSH. In the present systematic review, the gray literature such as conference presentations, expert opinion, dissertations, research and committee reports, and ongoing research were searched. Gray literature is papers that are not controlled by commercial publishers but are produced in print and electronic formats. [20]

**Inclusion and exclusion criteria**

Published English studies focusing on the nurses' knowledge about substance use and their attitude towards substance users were included in the systematic review. On the other hand, case reports, experimental studies, letters to editors, conferences, and reviews were excluded. In case of lack of access to relevant data, the corresponding author of studies was contacted.

**Study selection**

EndNote X8 software was used for the selection studies process. The two reviewers evaluated the selection studies process independently. Researchers removed duplicate articles electronically and manually, respectively. Then, the titles and abstracts of the articles were screened based on inclusion/exclusion criteria. Eventually, the full text of the studies was evaluated. To prevent the loss of relevant information was reviewed the reference list of eligible studies. In cases of disagreement between the two researchers, the studies were assessed by a third researcher.

**Data extraction and quality assessment**

Information such as the name of the first author, year of publication, location, sample size, male/female ratio, age, work experience, questionnaire applied for data collection, and key

results were extracted from the included studies. The appraisal tool for cross-sectional studies (AXIS tool) was used to assess the quality of the included studies. This scale assesses the quality of studies by considering 20-items. [21] AXIS specifically evaluates report quality (7 items), study design quality (7 items), and the possible introduction of biases (6 items). Researchers evaluate study quality with a two-point Likert, including yes (score of 1) and no (score of 0). Finally, AXIS rates the quality of studies at three levels: high (70 to 100%), fair (60 to 69.9%), and low (0 to 59.9%). [22] The two reviewers evaluated the quality of the included articles independently.

## Results

### *Study Selection*

A total of 2,300 studies were evaluated by searching online databases. After the exclusion of the duplicate articles, 2,048 studies remained. After screening the title and abstract of the articles, 1,836 studies were removed due to inconsistencies with the purpose of the present study, and 163 studies were removed due to the non-cross-sectional nature of the studies. After assessment of the full text of 41 articles, 16 studies were removed due to inappropriate study design or outcomes, and 13 studies were deleted due to lack of relevant information. Finally, twelve studies [13, 16-18, 23-30] were included in this systematic review (Figure 1).

### *Study Characteristics*

A total of 3,273 nurses were enrolled in the twelve studies. Of the nurses, 76.99% were female. All studies had a cross-sectional design. [13, 16-18, 23-30] Six studies [13, 16, 18, 25, 26, 30] assessed knowledge and eleven studies [13, 16-18, 23-29] assessed attitude. In five studies, [17, 18, 23, 25, 26] nurses working in the psychiatric ward were evaluated. Of the included studies, four studies [16, 18, 24, 27] were assessed in Europe, two studies [13, 23] were evaluated in Asia, two study [17, 26] was evaluated

in Africa, three study [25, 29, 30] was assessed in Australia, and one study [28] was evaluated in USA. The basic characteristics of the included studies are presented in Table 2.

***Methodological Quality of included study***

As presented in Figure 2, all studies had justification for sample size, six studies did not mention limitations, and four studies did not obtain consent from participants.

***Nurses' knowledge about substance use and their attitude towards substance users***

***a. Knowledge***

Knowledge of nurses towards substance use was assessed in six studies. [13, 16, 18, 25, 26, 30] The results were contradictory. Nurses' knowledge was desirable in two studies, [16, 25] three studies [18, 26, 30] insufficient, and one study [13] moderate. In seven studies, [13, 16, 17, 23, 26, 29, 30] participations in previous nurses' workshops varied from 5.93% to 66.14%.

***b. Attitude***

Attitude of nurses towards substance users was assessed in eleven studies. [13, 16-18, 23-29] The results were contradictory. Nurses' attitude was positive in five studies, [16, 18, 24, 25, 28] five studies [13, 17, 26, 27, 29] negative, and one study [23] moderately positive.

***Factors associated with nurses' knowledge about substance use and their attitude towards substance users***

As presented in Table 3, factors associated with nurses' knowledge about substance use and their attitude towards substance users were assessed in two [13, 25] and six studies, [13, 17, 23-25, 29] respectively. In the included studies, the relationship between knowledge or attitude with variables such as age, sex, ethnicity, level of education, organizational position, work experience, a history of participating in workshops about substance use or users, interest in the care, total hours of substance use courses in school, and total hours of continuing education related to substance use was assessed.

***a. Knowledge***

Factors associated with knowledge included age, sex, and work experience. [25] In contrast, another study found that there was no significant relationship between nurses' knowledge and individual and occupational variables. [13]

***b. Attitude***

Factors associated with attitude included age, [23, 25] sex, [24, 25] ethnicities, [24] level of education, [13] organizational positions, [24] work experience, [23, 25] a history of participating in workshops about substance use or users, interest in the care, [17] total hours of substance use courses in school, and total hours of continuing education related to substance use. [23] A study by Chang *et al.*, found that nurses working in psychiatry, managers, higher education, the experience of caring for patients with substance abuse had a more positive attitude. [23] Also, another study by Foster *et al.*, showed that bedside nurses, females, and blacks had a more positive attitude. [24]



**Discussion**

Based on the findings of the present study, the nurses' knowledge about substance use and their attitude towards substance users were relatively moderate and positive, respectively. Factors

associated with knowledge included age, sex, and work experience. Also, age, sex, ethnicity, level of education, organizational position, work experience, a history of participating in workshops about substance use or users, interest in the care, total hours of substance use courses in school, and total hours of continuing education related to substance use were possible factors related to nurses' attitude.

As shown in the present study, the knowledge of nurses toward substance use was moderate. However, the findings of the studies included in this systematic review were contradictory. An adequate level of knowledge can be a good predictor of nurses' better attitude in caring for patients with SUDs, which can ultimately lead to better patient management. [16] However, most nurses in the present study did not receive adequate specialized training on substance use or users, which could be one of the reasons for their lack of knowledge. Obviously, there is a major shortage of substance use or user training in nursing college curricula and clinical settings for nurses. [16, 31] Therefore, it is recommended that workshops about substance use or users be highlighted for nurses. On the other hand, due to limited studies in this field, it is suggested that further studies be designed in the future to obtain stronger results.

The findings of this study showed that the attitude of nurses toward substance users was relatively positive. However, the findings regarding nurses' attitudes were contradictory. These contradictions can be due to individual and occupational differences. Obviously, a positive attitude of nurses towards substance users can enhance the perception of caring behaviors and their practice. [32] Therefore, it is suggested that nurses' attitudes towards substance users be considered more in future studies.

The present study showed that factors associated with knowledge included age, sex, and work experience. However, this relationship was investigated in only two studies [13, 25] which could

not be generalized to all nurses. Therefore, it is suggested that future studies focus more on factors associated with knowledge of nurses towards patients with SUDs.

The findings of this study showed that age, sex, ethnicity, level of education, organizational position, work experience, a history of participating in workshops about substance use or users, interest in the care, total hours of substance use courses in school, and total hours of continuing education related to substance use were possible factors related to nurses' attitude. Despite the importance of demographic and occupational variables on nurses' attitudes toward substance users, limited studies have assessed these. In addition, the relationship between knowledge and attitude of nurses was not assessed in any study. The gaps between nurses 'knowledge and practice in caring for patients with SUDs are reduced by a more accurate assessment of the relationship between nurses' attitudes and their individual and occupational variables. [16] Also, educational interventions should be based on the status of these variables. [24] Therefore, it is suggested that with more accurate assessments of the level of attitude and its relationship with individual and occupational variables, educational interventions be designed based on the characteristics of different populations to be more effective.



**Limitations**

This study had several limitations. Due to the heterogeneity of studies' data and tools, a meta-analysis was not possible. The present systematic review showed that not enough data is available to generalize about nurses' knowledge about substance use and their attitude towards substance users.

**Recommendations for Future Research**

The published studies on the nurses' knowledge about substance use and their attitude towards substance users were contradictory. Also, the relationship between knowledge and attitude of nurses was not assessed in any study. Therefore, it is suggested that well-designed studies be conducted in the future to evaluate the knowledge and attitude of nurses and the relationship between these two main variables.

**Implications for nursing managers and policymakers**

Overall, the nurses' knowledge about substance use and their attitude towards substance users were moderate and relatively positive, respectively. Obviously, insufficient knowledge of nurses towards substance use can significantly affect the quality of nursing care. Workshops and guidelines related to substance use or users can play a key role in improvement of nurses' knowledge. Finally, knowledge enhancement can improve nurses' attitudes. It is recommended that nursing managers and policymakers use the findings of this systematic review to improve nursing care for patients with SUDs.

**Conclusions**

Overall, the nurses' knowledge about substance use and their attitude towards substance users were moderate and relatively positive, respectively. Optimal knowledge and the positive attitude of nurses can be effective in the improvement of the nursing care of patients with SUDs. Therefore, holding workshops and improvement of guidelines related to patient care with SUDs can be effective in enhancement of the knowledge and attitude of nurses and ultimately the quality of nursing care.

**References**

1. Priyadarshini SR, Sahoo PK, Jena D, Panigrahi R, Patnaik S, Mohapatra A. Knowledge, attitude and practice of dental professionals towards substance use. J Int Soc Prev Community Dent 2019;9(1):65-71.

2. Yang L, Wong LY, Grivel MM, Hasin DS. Stigma and substance use disorders: an international phenomenon. Curr Opin Psychiatry 2017;30(5):378-88.

3. Meckel KR, Kiraly DD. A potential role for the gut microbiome in substance use disorders. Psychopharmacology 2019;236(5):1513-30.

4. Teeters JB, Lancaster CL, Brown DG, Back SE. Substance use disorders in military veterans: prevalence and treatment challenges. Subst Abuse Rehabil 2017;8:69-77.

5. McKinnon CR, Johnson D, Stephan L. Substance Use. Child and Adolescent Behavioral Health: A Resource for Advanced Practice Psychiatric and Primary Care Practitioners in Nursing. 2021:397-424.

6. Gonzalez Y, Kozachik SL, Finnell DS. Educating ambulatory care nurses to address substance use. J Nurs Care Qual 2020;35(4):353-8.

7. Afkar A, Rezvani SM, Emami Sigaroudi A. Measurement of factors influencing the relapse of addiction: a factor analysis. Int J High Risk Behav Addict 2017;6(3):e32141.

8. Hedegaard H, Miniño AM, Warner M. Drug overdose deaths in the United States, 1999-2018. NCHS data brief 2020;356:1-8.

9. Kiang MV, Basu S, Chen J, Alexander MJ. Assessment of changes in the geographical distribution of opioid-related mortality across the United States by opioid type, 1999-2016. JAMA Netw Open 2019;2(2):e190040.

10. Knopf-Amelung S, Gotham H, Kuofie A, Young P, Stinson RM, Lynn J, et al. Comparison of instructional methods for screening, brief intervention, and referral to treatment for substance use in nursing education. Nurse Educ 2018;43(3):123-7.

11. Smothers Z, Reynolds V, McEachern M, Derouin AL, Carter BM, Muzyk A. Substance use education in schools of nursing: a systematic review of the literature. Nurse Educ 2018;43(3):136-9.

12. Bell CAF, McCurry M. Opioid use disorder education for acute care nurses: An integrative review. J Clin Nurs 2020;29(17-18):3122-35.

13. Tarafdar SA, Gupta S. Knowledge of and attitude on assessment of substance use disorders of nurses working in general wards. Indian J Psychiatry Nurs 2018;15(1):33-8.

14. Finnell DS, Savage CL, Hansen BR, Sanchez M, White KM, Johnson JA, et al. Integrating substance use content in an "overcrowded" nursing curriculum. Nurse Educ 2018;43(3):128-31.

15. Bohm K, Lund R, Nordlander J, Vicente V. Ambulance nurse's experience to relieve pain in patients with addiction problems in Sweden. Int Emerg Nurs 2019;46:100779.

16. Kelleher S, Cotter P. A descriptive study on emergency department doctors' and nurses' knowledge and attitudes concerning substance use and substance users. Int Emerg Nurs 2009;17(1):3-14.

17. Adayonfo E, Selo-Ojeme C. Attitude of psychiatric ward nurses of two Nigerian tertiary hospital to substance use clients. Afr J Psychol Study Soc Issues 2017;20(1):41-50.

18. Barry KR, Tudway JA, Blissett J. Staff drug knowledge and attitudes towards drug use among the mentally ill within a medium secure psychiatric hospital. J Subst Use 2002;7(1):50-6.

19. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71.

20. Corlett RT. Trouble with the gray literature. Biotropica 2011;43(1):3-5.

21. Downes MJ, Brennan ML, Williams HC, Dean RS. Development of a critical appraisal tool to assess the quality of cross-sectional studies (AXIS). BMJ Open 2016;6(12):e011458.

22. Rovito MJ, Bruzzone A, Lee E, López Castillo H, Talton W, Taliaferro L, et al. Assessing Health-Related Quality of Life Among Survivors of Testicular Cancer: A Systematic Review. Am J Mens Health 2021;15(1):1557988320982184.

23. Chang Y-P, Yang M-S. Nurses' attitudes toward clients with substance use problems. Perspect Psychiatr Care 2012;49(2):94-102.

24. Foster J, Onyeukwu C. The attitudes of forensic nurses to substance using service users. J Psychiatr Ment Health Nurs 2003;10(5):578-84.

25. Happell B, Carta B, Pinikahana J. Nurses' knowledge, attitudes and beliefs regarding substance use: A questionnaire survey. Nurs Health Sci 2002;4(4):193-200.

26. Syombua MC. Knowledge, Attitude and Management Skills of Nurses towards Substance Dependent Patents at Mathari Hospital, Nairobi: University of Nairobi; 1990.

27. Raistrick DS, Tober GW, Unsworth SL. Attitudes of healthcare professionals in a general hospital to patients with substance misuse disorders. J Subst Abus. 2015;20(1):56-60.

28. Allen K. Attitudes of registered nurses toward alcoholic patients in a general hospital population. Int J Addict 1993;28(9):923-30.

29. Ford R, Bammer G, Becker N. The determinants of nurses' therapeutic attitude to patients who use illicit drugs and implications for workforce development. J Clin Nurs 2008;17(18):2452-62.

30. Norberg MM, Gates P, Dillon P, Kavanagh DJ, Manocha R, Copeland J. Screening and managing cannabis use: comparing GP's and nurses' knowledge, beliefs, and behavior. Subst Abuse Treat Prev Policy 2012;7(1):1-10.

31. Tran DT, Stone AM, Fernandez RS, Griffiths RD, Johnson M. Changes in general nurses' knowledge of alcohol and substance use and misuse after education. Perspect Psychiatr Care 2009;45(2):128-39.

32. Zewiel MA-f, Sabra AE, El Sayes HA, Essa MA-R. Efficacy of Educational Caring Program on the Nurses' Attitude and Perception of Caring Behavior toward Patients with Substance Use Disorder. Am J Nurs Res 2020;8(5):543-51.

**Table 1.** Search strategy terms.

| PICO | Keywords | # | Search Terms |
|---|---|---|---|
| **Population/Problem** | Nurses/Knowledge/Attitude/Nurses/Substance use/Substance users | 1 | (("Knowledge") OR ("Attitude")) AND (("Nurses")) AND (("Substance Use") OR ("Substance Uses") OR ("Use, Substance") OR ("Drug Abuse") OR ("Drug Dependence") OR ("Dependence, Drug") OR ("Drug Addiction") OR ("Addiction, Drug") OR ("Substance Use Disorders") OR ("Disorder, Substance Use") OR ("Substance Use Disorder") OR ("Drug Use Disorders") OR ("Addiction, Drug") OR ("Disorder, Drug Use") OR ("Drug Use Disorder") OR ("Organic Mental Disorders, Substance-Induced") OR ("Organic Mental Disorders, Substance Induced") OR ("Addiction, Drug") OR ("Substance Abuse") OR ("Abuse, Substance") OR ("Substance Abuses") OR ("Substance Dependence") OR ("Addiction, Drug") OR ("Dependence, Substance") OR ("Substance Addiction") OR ("Addiction, Substance") OR ("Prescription Drug Abuse") OR ("Prescription Drug Abuse") OR ("Abuse, Prescription Drug") OR ("Drug Abuse, Prescription") OR ("Drug Habituation") OR ("Habituation, Drug") OR ("Drug and Narcotic Control") OR ("Psychoses, Alcoholic") OR ("Psychoses, Alcoholic") OR ("Psychoses, Alcoholic") OR ("Illicit Drugs") OR ("Designer Drugs") OR ("Designer Drugs") OR ("Codependency, Psychological") OR ("Alcohol-Related Disorders") OR ("Drug Overdose") OR ("Alcohol-Induced Disorders") OR ("Alcoholic Intoxication") OR ("Alcoholism") OR ("Amphetamine-Related Disorders") OR ("Narcotic-Related Disorders") OR ("Marijuana Abuse") OR ("Tobacco Use Disorder") OR ("Cocaine-Related Disorders") OR ("Marijuana Use")). |
| **Intervention** | - | - | |
| **Comparison** | - | - | - |
| **Outcome** | Nurses' knowledge about substance use and their attitude towards substance users and factors associated with | - | - |

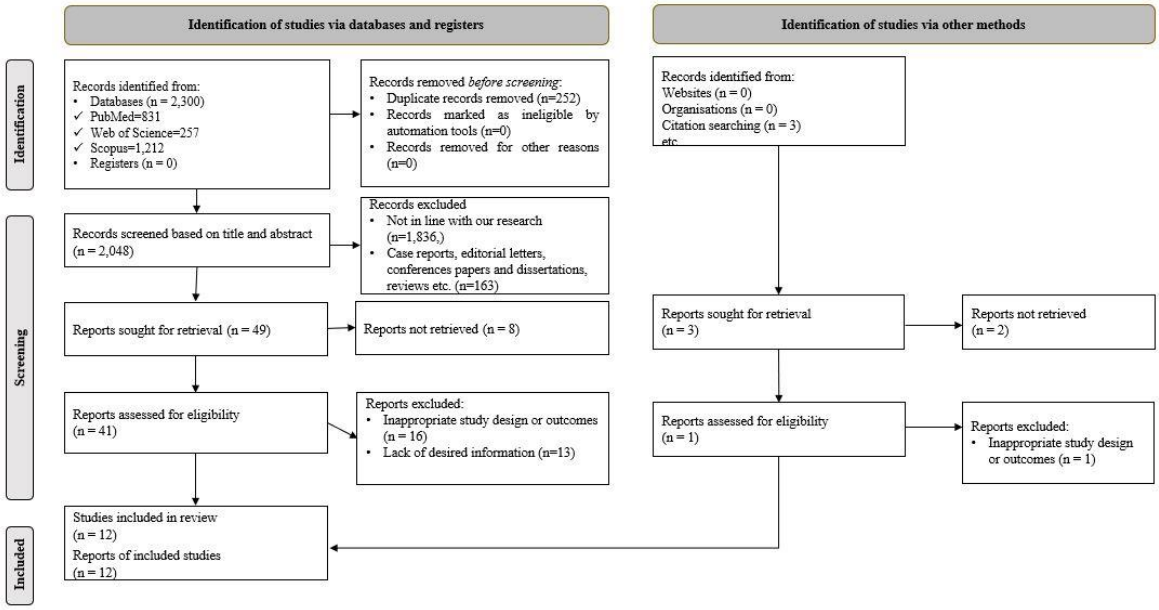
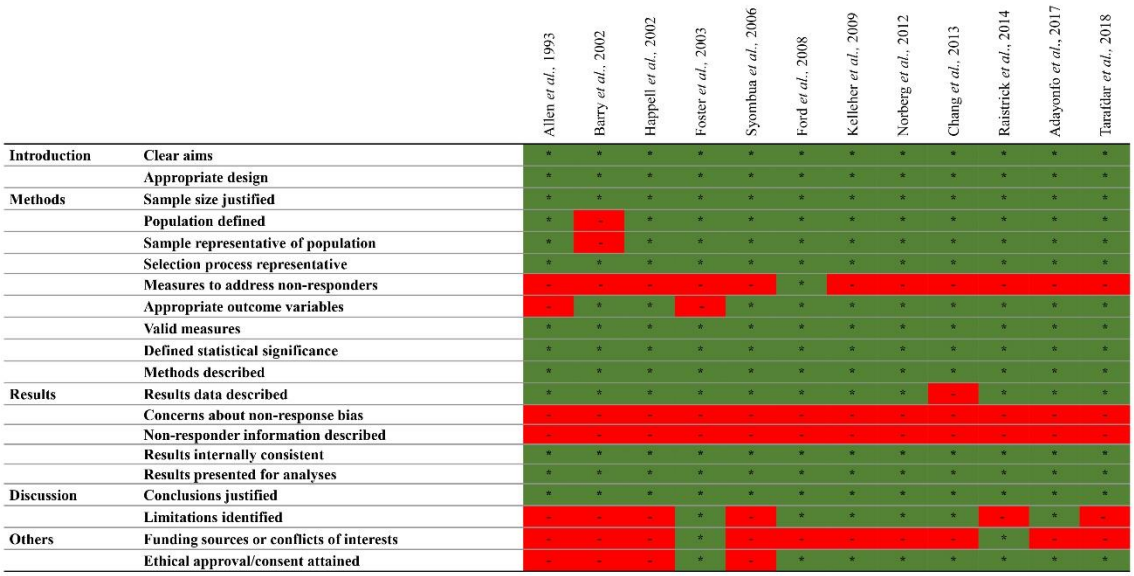



**Figure 1.** Flow diagram of the study selection process.



| | | Allen *et al.*, 1993 | Barry *et al.*, 2002 | Happell *et al.*, 2002 | Foster *et al.*, 2003 | Syombua *et al.*, 2006 | Ford *et al.*, 2008 | Kelleher *et al.*, 2009 | Norberg *et al.*, 2012 | Chang *et al.*, 2013 | Raistrick *et al.*, 2014 | Adayonlo *et al.*, 2017 | Tarafdar *et al.*, 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Introduction** | **Clear aims** | * | * | * | * | * | * | * | * | * | * | * | * |
| | **Appropriate design** | * | * | * | * | * | * | * | * | * | * | * | * |
| **Methods** | **Sample size justified** | * | * | * | * | * | * | * | * | * | * | * | * |
| | **Population defined** | * | - | * | * | * | * | * | * | * | * | * | * |
| | **Sample representative of population** | * | - | * | * | * | * | * | * | * | * | * | * |
| | **Selection process representative** | * | * | * | * | * | * | * | * | * | * | * | * |
| | **Measures to address non-responders** | - | - | - | - | - | * | - | - | - | - | - | - |
| | **Appropriate outcome variables** | - | * | * | - | * | * | * | * | * | * | * | * |
| | **Valid measures** | * | * | * | * | * | * | * | * | * | * | * | * |
| | **Defined statistical significance** | * | * | * | * | * | * | * | * | * | * | * | * |
| | **Methods described** | * | * | * | * | * | * | * | * | * | * | * | * |
| **Results** | **Results data described** | * | * | * | * | * | * | * | * | - | * | * | * |
| | **Concerns about non-response bias** | - | - | - | - | - | - | - | - | - | - | - | - |
| | **Non-responder information described** | - | - | - | - | - | - | - | - | - | - | - | - |
| | **Results internally consistent** | * | * | * | * | * | * | * | * | * | * | * | * |
| | **Results presented for analyses** | * | * | * | * | * | * | * | * | * | * | * | * |
| **Discussion** | **Conclusions justified** | * | * | * | * | * | * | * | * | * | * | * | * |
| | **Limitations identified** | - | - | - | * | - | * | * | * | * | - | * | - |
| **Others** | **Funding sources or conflicts of interests** | - | - | - | * | - | - | - | - | - | * | - | - |
| | **Ethical approval/consent attained** | - | - | - | * | - | * | * | * | * | * | * | * |

**Figure 2**. Assessment of the quality of the included articles.

**Table 2.** Basic characteristics of the included studies in this systematic review.

| First Author/year | Location | Ward | Sample Size | History of participating in workshops about substance use or users | M/F ratio | Age (mean±SD) | Work experience (mean±SD) | Knowledge / Attitude | Questionnaire of Knowledge/ Attitude | Key results |
|---|---|---|---|---|---|---|---|---|---|---|
| **Allen, *1993*** [28] | USA | Emergency Department/ ICU/CCU/ Surgical/ operating room/ orthopedic/ | 66 | N/A | N/A | N/A | N/A | Attitude | Marcus Alcoholism Questionnaire | The attitude of the nurses toward alcoholic patients was strong positive. |
| **Barry *et al., 2002*** [18] | Wales | Psychiatry | 64 | N/A | N/A | N/A | N/A | Knowledge /Attitude | Drug Knowledge Questionnaire/ A researcher-made questionnaire | The knowledge and attitude of the nurses were insufficient and positive, respectively. |
| **Happell *et al., 2002*** [25] | Australia | Psychiatry | 134 | N/A | 47.76/ 52.34 | N/A | N/A | Knowledge / Attitude | CATT | The knowledge and attitude of the nurses were desirable and positive, respectively. Nurses' knowledge was insufficient in the assessment and management of alcohol and drug problems. |
| **Foster *et al.*, 2003** [24] | England | Forensic | 63 | N/A | 60.32/ 39.68 | N/A | N/A | Attitude | SAAS | The attitude of the forensic nurses was positive. |
| **Syombua, *2006*** [26] | Kenya | Psychiatry | 155 | 27.74% | 34.19/ 65.81 | N/A | 15.00 | Knowledge /Attitudes | A researcher-made questionnaire | The knowledge and attitude of the nurses were insufficient and negative, respectively. |
| **Ford *et al., 2008*** [29] | Australia | N/A | 1,605 | 66.14% | 6.00/94.00 | 44.00 (SD=9.00) | 21.00 (SD=10.00) | Attitude | AAPPQ | The attitude of the nurses toward alcoholic patients was negative. |
| **Kelleher *et al., 2009*** [16] | Ireland | Emergency department | 58 | 25.76% | 13.64/ 86.36 | N/A | N/A | Knowledge / Attitudes | A researcher-made questionnaire/ SAAS | The knowledge and attitude of the nurses were desirable and positive, respectively. In addition, the nurses' knowledge about alcohol and drug misuse was desirable. Nurses' knowledge of treatment strategies was insufficient. |
| **Norberg *et al., 2012*** [30] | Australia | N/A | 161 | 59.01% | N/A | 49.93 (SD=8.04) | N/A | Knowledge | A researcher-made questionnaire | 66.67% of nurses had insufficient knowledge about Cannabis use. |
| **Chang *et al., 2013*** [23] | Taiwan | Psychiatry and Non-psychiatry | 489 | 5.93% | 0.41/99.59 | 28.20 (SD=4.90) | 6.40 (SD=4.50) | Attitude | Nurses' attitudes toward clients with substance use | The attitude of the nurses was moderately positive. |
| **Raistrick *et al, 2014*** [27] | England | General | 300 | N/A | N/A | N/A | N/A | Attitude | AAPPQ | The attitude of the nurses was negative. |
| **Adayonfo *et al., 2017*** [17] | Nigeria | Psychiatry | 28 | 60.71% | 17.86/ 82.14 | N/A | N/A | Attitude | DDPPQ | 53.57% of nurses had a negative attitude. |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Tarafdar *et al., 2018*** [13] | India | General/ Emergency Department/ ICU/ Paediatrics/ Surgical | 150 | 32.00% | 0/100 | N/A | N/A | Knowledge /Attitude | A researcher-made questionnaire | The knowledge and attitude of the nurses were moderate and negative, respectively. |

**ICU:** Intensive Care Unit; **CCU:** Cardiac Care Unit; **CATT:** Crisis Assessment and Treatment Teams; **SAAS:** Substance Abuse Attitudes Survey; **AAPPQ:** Alcohol and Alcohol Problems Perception Questionnaire; **DDPPQ:** Drug and Drug Problems Perceptions Questionnaire.

**Table 3.** Factors associated with nurses' knowledge about substance use and their attitude towards substance users.

| First Author/year | Factors associated with nurses' knowledge about substance use and their attitude towards substance users |
|---|---|
| **Happell *et al.*, *2002*** [25] | ✓ ***Knowledge:*** there was a significant relationship between nurses' knowledge and variables such as age, sex, and work experience.<br>✓ ***Attitude:*** there was a significant relationship between nurses' attitude and variables such as age, sex, and work experience. |
| **Foster *et al.*, 2003** [24] | ✓ ***Attitude:*** there was a significant relationship between nurses' attitude and variables such as sex, organizational position, and ethnicity. Bedside nurses, females, and blacks had a more positive attitude. |
| **Ford et al., 2008** [29] | ✓ ***Attitude:*** there was no significant relationship between nurses' attitudes and individual and occupational characteristics such as age, sex, level of education, work experience, and history of participating in workshops about substance use or users. |
| **Chang *et al.*, *2013*** [23] | ✓ ***Attitude:*** there was a significant relationship between nurses' attitude and variables such as age, work experience, total hours of substance use courses in school, and total hours of continuing education related to substance use. Also, nurses working in psychiatry, managers, higher education, the experience of caring for patients with substance abuse had a more positive attitude. |
| **Adayonfo *et al., 2017*** [17] | ✓ ***Attitude:*** there was a significant relationship between nurses' attitudes and variables such as a history of participating in workshops about substance use or users and interest in caring for patients with substance use. |
| **Tarafdar *et al., 2018*** [13] | ✓ ***Knowledge:*** there was no a significant relationship between nurses' knowledge and study variables.<br>✓ ***Attitude:*** there was a significant relationship between nurses' attitude and level of education. |