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Research

Knowledge, skills, and attitude of hemodialysis nurses in recognizing depression among hemodialysis patients in Northern Philippines: a mixed methods study.

Lea Andreau S. Liwagon*[1], Ashley A. Bangcola[2]

[1]*Lecturer, College of Nursing, Mindanao State University-Iligan Institute of Technology, Iligan City, Philippines, 9100*
[2]*Associate Professor, College of Health Sciences, Mindanao State University, Marawi City, Philippines 9700*

*Author for Correspondence: Lea Andreau S. Liwagon
Email: ashley.bangcola@msumain.edu.ph

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Abstract

Background: Depression in hemodialysis patients is a significant concern, and hemodialysis nurses play a crucial role in its identification and management.
Objective: This study aimed to explore the knowledge, skills, and attitudes of hemodialysis nurses in Iligan City towards recognizing depression in hemodialysis patients.
Methods: A mixed-methods approach was employed, combining quantitative and qualitative phases. Purposive sampling selected 35 participants for the quantitative phase, and twelve of these were chosen for the qualitative phase based on extreme responses in the questionnaire. Descriptive analysis, Spearman Rank Point-Biserial Correlation, and Z-Score analysis were used in the quantitative phase, while content and thematic analyses were applied in the qualitative phase.
Results: The findings reveal that the general knowledge level was average (M=0.55), and skills in identifying depression were moderate (M=3.18). Attitudes were generally neutral regarding professional confidence (M=3.22) and therapeutic optimism (M=3.25), but positive from a generalist perspective (M=3.87). In the qualitative phase, professional development, self-efficacy, and self-awareness emerged as crucial factors influencing knowledge, skills, and attitudes.
Conclusion: The study provided a comprehensive understanding of the factors affecting hemodialysis nurses' knowledge, skills, and attitudes towards recognizing depression. Triangulation and validation of results highlighted the importance of professional development, self-efficacy, and self-awareness in enhancing nurses' abilities to manage depression in hemodialysis patients.

Keywords: Depression, hemodialysis, Nurses, knowledge, skills, attitude, mixed-methods study.

INTRODUCTION

Hemodialysis patients and their families face substantial challenges due to the unpredictable nature of their condition and its impact on quality of life[1] (Caldeira Skrebsky Menegazzo *et al.*, 2023). Depression is notably prevalent among hemodialysis patients, with a reported prevalence rate between 22% and 39%[2] (Mazharulhaq *et al.*, 2023). This mental health condition adversely affects patients' well-being, adherence to treatment, mortality rates, and overall health outcomes[3] (Callahan & Malhotra, 2020). For instance, individuals with end-stage renal disease (ESRD) undergoing hemodialysis are over three times more likely to attempt suicide compared to those without ESRD[4] (Mohamed et al., 2023). The strong correlation between chronic kidney disease and increased suicide risk necessitates targeted mental health interventions.

Despite the clear need for psychological care, hemodialysis treatment often overlooks mental health aspects[5] (Almutary, 2023). This gap in care indicates that current healthcare strategies fail to address the comprehensive needs of these vulnerable patients.

Hemodialysis nurses play a crucial role in promoting the psychological and overall health of their patients. It is essential that these nurses are equipped with the knowledge and skills to recognize and address depression, referring patients to appropriate mental health professionals when necessary. The ability of the dialysis team to identify and manage periods of heightened stress is vital for preventing significant adjustment issues in patient[6] (HSU and HUANG, 2019).

The growing hemodialysis patient population and limited mental health resources in Iligan City, Philippines highlight the urgent need for proficient hemodialysis nurses. Research indicates that hemodialysis nurses often lack the necessary knowledge, skills, and attitudes (KSAs) to identify depression[7] (Forwaty, Usraleli and Khusniyati, 2022). Similarly, a 2019 review found that most nurses did not possess adequate expertise in recognizing depression[8] (Gurung, Shah and Lamichhane, 2019). Thus, evaluating the KSAs of hemodialysis nurses in Iligan City is critical to ensure optimal patient care and outcomes.

This study aims to assess the KSAs of hemodialysis nurses in Iligan City, Philippines regarding the detection of depression in their patients. Early identification and management of depression can significantly improve treatment outcomes and quality of life for hemodialysis patients. By examining the factors influencing nurses' ability to recognize depression, this research seeks to identify areas for improvement and develop targeted interventions to enhance patient care.

METHODOLOGY

Research Design

The research design chosen for this study was the sequential explanatory design. Sequential explanatory design is a mixed-methods research approach that combines both quantitative and qualitative data collection and analysis. This design allows researchers to triangulate their findings, enhancing the validity and reliability of their results by combining different types of data collection methods.[9] (Creswell and Creswell, 2018)

In this study, the first phase involved administering surveys to nurses working with hemodialysis patients to gather data on their demographic profile, knowledge about depression in hemodialysis patients, skills in recognizing depression, and attitudes towards depression in this population. This helped answer research questions 1 to 5. The quantitative data collected in this phase provided a broad understanding of the relationships between the variables of interest.

The second phase of the study involved conducting interviews with a subset of nurses who scored extremely high or low on the knowledge, skills, and attitudes questionnaires to explore the factors contributing to their responses. This qualitative data provided deeper insights into the reasons behind the nurses' knowledge, skills, and attitudes towards depression in hemodialysis patients.

The sequential explanatory design was chosen for this study because it allowed for a comprehensive understanding of the research questions by combining quantitative and qualitative data collection and analysis. This design is particularly suitable for studies aiming to explore complex phenomena and understand the intricacies of relationships between variables.[9]

Research Setting and Participants

This study was conducted in five hemodialysis centers in Iligan City. Iligan City is a bustling city located in the northern part of Mindanao in the Philippines. It is home to a diverse population and has several healthcare facilities catering to the needs of its residents[10] (Toledo-Bruno, Bruno and Paquit, 2022). Iligan City was chosen as the locale of the study due to its high prevalence of chronic kidney disease and the increasing

need for hemodialysis services in the area. According to the National Kidney and Transplant Institute, Iligan City has been identified as one of the areas in the Philippines with a high incidence of kidney disease[10].

This study employed a combination of census approach and purposive sampling technique. In the quantitative phase of this study, a census approach was used to survey the entire population of nurses working at the five hemodialysis centers in Iligan City. A total of (35) nurses chose to participate. This method allowed for a comprehensive analysis of the demographics, attitudes, and experiences of all nurses working at the hospitals. The decision to use a census approach was justified by the total population size and the need to cover the entire hemodialysis nurse community in the city.

For the qualitative phase, (12) participants were purposively selected for in-depth interviews. Inclusion criteria required participants to be registered nurses currently working as hemodialysis nurses in the research locale, and to participate voluntarily. Selection was based on extreme responses identified in the quantitative phase, enabling deeper exploration of influencing variables. Participation was voluntary, with exclusion of nurses who declined consent.

Research Instruments

In the quantitative aspect of the study, the researcher employed a four-section-modified questionnaire, which served as a tool for gathering essential information pertaining to the knowledge, skills, and attitude of hemodialysis nurses in identifying depression among their patients undergoing hemodialysis. The initial part of this questionnaire was dedicated to acquiring demographic details of the hemodialysis nurses.

The knowledge of nurses on depression in hemodialysis patients was evaluated using the Depression Literacy Questionnaire (D-Lit) by[11] Griffiths, Christensen and Jorm (2008), This 22-item tool, based on DSM diagnostic criteria, measures mental health literacy related to depression.

Section 3 of the research instrument evaluated hemodialysis nurses' perceived skills in recognizing depression using a self-assessment questionnaire. The items were based on the WHO's Mental Health Gap Action Programme (mhGAP) guide and depression screening tools recommended by the American Psychological Association.

The last section of the research instrument assessed hemodialysis nurses' attitudes towards identifying depression in patients using the revised Depression Attitude Questionnaire (R-DAQ). This 22-item self-report tool, developed by[12] Haddad et al. (2015), evaluates mental health professionals' attitudes across three subscales: Professional Confidence, Therapeutic Optimism, and Generalist Perspective.

Following the analysis of the quantitative data obtained from the study, the researcher proceeded to conduct in-depth, one-on-one interviews with participants who had provided statistically extreme responses during the quantitative phase of the research. The purpose of these interviews was to delve deeper into the respondents' perspectives and gain further insights.

Validity and Reliability of Research Instruments

The validity and reliability of research instruments, such as the Depression Literacy Questionnaire (D-Lit) and the revised Depression Attitude Questionnaire (R-DAQ), are crucial for ensuring the accuracy and consistency of the data collected. Both questionnaires have been subjected to rigorous testing to establish their validity and reliability, as evidenced by the relevant literature.

In the case of the R-DAQ,[12] Haddad et al. (2015) established the reliability and validity of the R-DAQ, with Cronbach's alpha at 0.85 and significant correlation with depression-related measures. This comprehensive evaluation of the R-DAQ's psychometric properties ensures that the instrument can be reliably used to assess participants' attitudes towards depression, contributing to a more accurate understanding of this complex issue.

A pilot test assessed the reliability of a researcher-devised questionnaire for nurses' depression recognition skills, yielding a Cronbach's alpha of 0.857, indicating high internal consistency.

In the context of this research, the Depression Literacy Questionnaire (D-Lit) and the Revised Attitude Questionnaire (R-DAQ) were adapted from their original versions, as referenced in the works of[11,12] Griffiths, Christensen and Jorm (2008)and Haddad et al. (2015), respectively. Prior to incorporating these adapted questionnaires into the study, the researcher obtained necessary permission from the developers of D-Lit questionnaire to ensure the appropriate usage and adherence to the original instruments' guidelines.

Data Gathering Procedure

Prior to initiating the data collection process for this sequential explanatory research study, several preliminary measures were undertaken. Initially, approval was sought from the Research Ethics Committee of the proponents' institution to guarantee adherence to ethical principles and to safeguard the rights of the participants involved. Throughout the process, data confidentiality and privacy were strictly maintained, with responses securely recorded and handled in accordance with ethical guidelines and data protection protocols. The entire data collection was conducted between January to March 2024, spanning a two-month duration.

Quantitative Phase

After obtaining necessary approvals and coordinating with the administrators of the five hemodialysis centers in Iligan City, a validated questionnaire was administered to 35 nurses. This questionnaire collected demographic data including gender, age, marital status, educational level, years of experience, and RENAP certification status. Additionally, it evaluated nurses' knowledge, skills, and attitudes (KSA) regarding depression recognition and management, utilizing a Likert scale where higher scores denoted enhanced KSA in identifying depression.

From the quantitative data, extreme responses were identified using Z-scores, indicating data points that significantly deviated from the majority of responses. These extreme responses were considered outliers, warranting further exploration.

Qualitative Phase

Semi-structured interviews were conducted with a subset of (12) nurses who exhibited either very high or very low scores on the KSA questionnaire. The purpose of the qualitative phase was to delve deeper into the extreme responses obtained from the KSA questionnaire.

During the interviews, which took place in private settings, participants were encouraged to express their thoughts, experiences, and challenges faced in recognizing and managing depression in their practice. These interviews were audio-recorded with participants' consent, and detailed field notes were also taken to capture any non-verbal cues or contextual observations that could provide additional insights.

Thematic analysis was utilized by the researcher to uncover patterns, meanings, and insights within the data and provided a way to organize and make sense of the qualitative information collected. Overall, this qualitative phase of data gathering provided a more in-depth understanding of the factors influencing nurses' KSA in recognizing depression.

Integration of the Quantitative and Qualitative Strands

The final step in the data collection process involved merging the results from the quantitative and qualitative phases to identify areas where they agreed or disagreed.

While the quantitative data established statistical correlations, the qualitative data provided insights and explanations. The qualitative data underwent content and thematic analysis, and the researcher then evaluated how they complemented and elucidated the quantitative results, as well as any new insights gained. This integration helped obtain a more thorough understanding of how demographic factors affect nurses' knowledge, skills, and abilities in identifying depression.

METHODS OF DATA ANALYSIS

In the quantitative phase, various statistical methods were employed to analyze data collected from questionnaires. Descriptive analysis was utilized to summarize the demographic profile of nurses, providing insights into their characteristics.

Frequency and percentage calculations highlighted the occurrence of specific responses, while mean values elucidated overall trends in nurses' KSA regarding depression recognition. Spearman Rank Point-Biserial Correlation was used to explore relationships between demographic factors and nurses' KSA. Additionally, Z-score analysis identified extreme responses necessitating further investigation[13]. (Aggarwal, 2017)

The qualitative phase analysis section delves into the intricate world of data interpretation, focusing on two prominent methods: Content Analysis and Thematic Analysis. Content analysis dissected nurses' responses to the KSA questionnaire, uncovering underlying factors contributing to extreme scores. Thematic analysis identified patterns and themes within nurses' narratives, offering deeper insights into their experiences, beliefs, and attitudes regarding depression recognition in hemodialysis patients[14]. (Braun and Clarke, 2012)

Methodological Rigor (Trustworthiness of the Study)

The methodological rigor of this study was ensured through a mixed methods approach, combining both quantitative and qualitative data collection methods. The survey instrument was thoroughly reviewed and validated by a panel of experts in the field of nephrology and mental health.

To enhance the trustworthiness of the study findings, triangulation was employed by comparing and contrasting the results obtained from the quantitative survey data with the qualitative interview data. Member checking was also utilized to validate the accuracy and credibility of the study findings with participants.

Furthermore, the researcher ensured transparency and reflexivity throughout the research process by acknowledging their own biases and assumptions that may have influenced the study outcomes. By incorporating these rigorous methodological strategies, the study findings are reliable, valid, and trustworthy for informing future interventions and practices in recognizing depression among hemodialysis patients in Iligan City.

Ethical Considerations

This research adhered to World Health Organization guidelines for mixed-methods research[15] (O'Sullivan and Khan, 2020). The study received approval from the proponents' institution on December 2023 with ethics clearance approval number 2023-02.

Throughout, the researcher upheld the highest ethical principles to produce transparent, credible, and meaningful research outcomes. Participants were recruited with informed consent, provided clear information about the study's purpose, procedures, and potential risks and benefits. Participation was voluntary, with no monetary compensation offered, though completed manuscripts were shared with participating hemodialysis centers.

Confidentiality and anonymity were ensured, with participant responses and personal information kept secure and private. Measures were taken to minimize harm or discomfort to participants, with support services available and mental health resources provided.

RESULTS

This study utilized a mixed-methodologies sequential design to investigate the knowledge, skills, and attitude of hemodialysis nurses in Iligan City in identifying depression among hemodialysis patients. The study provided noteworthy findings through the use of both qualitative and quantitative research methods.

Quantitative Findings

Knowledge of Hemodialysis Nurses About Depression in Patients

In order to assess the understanding of the respondents in identifying depression among hemodialysis patients, the Depression Literacy Questionnaire comprising 22 items was employed as a means to gauge their mental health literacy, specifically concerning depression.

Table 1: Hemodialysis Nurses' Knowledge Assessment on Depression Understanding and Symptom Recognition

Item	Statements	Mean	SD	Literacy Interpretation
K1	People with depression often speak in a rambling and disjointed way.	0.43	0.50	Average
K2	People with depression may feel guilty when they are not at fault.	0.66	0.48	High
K3	Reckless and foolhardy behavior is a common sign of depression.	0.26	0.44	Low
K4	Loss of confidence and poor self-esteem may be a symptom of depression.	0.89	0.32	Very High
K5	Not stepping on cracks in the footpath may be a sign of depression.	0.49	0.51	Average
K6	People with depression often hear voices that are not there.	0.37	0.49	Low
K7	Sleeping too much or too little may be a sign of depression.	0.94	0.24	Very High
K8	Eating too much or losing interest in food may be a sign of depression.	1.00	0.00	Very High
K9	Depression does not affect your memory and concentration.	0.71	0.46	High
K10	Having several distinct personalities may be a sign of depression.	0.20	0.41	Low
K11	People may move more slowly or become agitated as a result of their depression.	0.83	0.38	Very High
K12	Clinical psychologists can prescribe antidepressants.	0.29	0.46	Low
K13	Moderate depression disrupts a person's life as much as multiple sclerosis or deafness.	0.60	0.50	High
K14	Most people with depression need to be hospitalized.	0.60	0.50	High
K15	Many famous people have suffered from depression.	0.80	0.41	Very High
K16	Many treatments for depression are more effective than antidepressants.	0.20	0.41	Low
K17	Counselling is as effective as cognitive behavioral therapy for depression.	0.00	0.00	Very Low

Item	Statements	Mean	SD	Literacy Interpretation
K18	Cognitive behavioral therapy is as effective as antidepressants for mild to moderate depression.	0.77	0.43	High
K19	Of all the alternative and lifestyle treatments for depression, vitamins are likely to be the most helpful.	0.57	0.50	Average
K20	People with depression should stop taking antidepressants as soon as they feel better.	0.69	0.47	High
K21	Antidepressants are addictive.	0.26	0.44	Low
K22	Antidepressant medications usually work straight away.	0.54	0.51	Average
Overall		**0.55**	**0.14**	**Average**

Note: 0 - 0.19= Very Low, 0.2 - 0.39= Low, 0.4 - 0.59= Average, 0.6 - 0.79= High, 0.8 – 1= Very High

Table 1 presents the Hemodialysis nurses' knowledge on depression understanding and symptom recognition through 22 statements rated by mean responses, standard deviation (SD), and literacy interpretation. The overall mean score was 0.55 with an SD of 0.14, indicating an average literacy level.

Nurses showed high knowledge in statements related to symptoms like sleep disturbances, agitation, and loss of confidence, with the highest mean scores seen in statements about eating and sleeping patterns and agitation as signs of depression. However, they had low knowledge about reckless behavior, multiple personalities, and misconceptions about antidepressants, potentially affecting their ability to provide effective care.

The study used a Z-score to identify extreme responses, leading to interviews that provided deeper insights. High responses indicated good understanding of specific symptoms, while low responses suggested gaps in knowledge about therapeutic interventions and misconceptions about the necessity of hospitalization and the discontinuation of antidepressants.

Table 2: Analysis of Test Scores, Nurses' Extent of Knowledge About Depression.

Minimum	Median	Mean Score	Maximum	SD	Interpretation
6	12	12.085	18	3.061	Average Literacy

Score Range: Very Low Literacy=0.0 - 4.3, Low Literacy=4.4 - 8.7, Average Literacy=8.8 - 13.1, High Literacy=13.2 - 17.5, Very High Literacy=17.6 – 22

The results from Table 2 show that the minimum score for nurses' knowledge of depression among hemodialysis patients is 6, while the maximum score is 18. Overall, the respondents mean literacy score is ~12.09 (SD = 3.062) indicating an Average Literacy level regarding knowledge towards depression. Moreover, 50% of the respondents have scores at least 12 (Median = 12) out of 22 total points.

In interpreting these findings, it can be said that the nurses in Iligan City possess an average level of knowledge regarding depression among hemodialysis patients. This suggests that while they have a basic understanding of the condition, there may still be room for improvement in their knowledge base.

The study also revealed that the nurses have varying levels of knowledge in recognizing depression among patients. The highest percentage of correct responses was found when addressing the impact of depression on a patient's eating pattern or appetite, indicating that nurses are more aware of this particular symptom. Nevertheless, all participants provided inaccurate responses about their ability to recognize the efficacy of non-pharmacological interventions, such as cognitive behavioral therapy, for the management of depression. According to the average results, the nurses' general knowledge level can be categorized as average.

Skills of Hemodialysis Nurses in Recognizing Depression in Patients

Table 3: Hemodialysis Nurses' Skills Assessment in Dealing with Depression

Item	Statements	Mean	SD	Interpretation
S1	I can create an environment that facilitates open communication, a safe and non-judgmental space for patients to share their thoughts and feelings.	3.26	0.85	High Level
S2	I actively listen by giving my full attention to the patient, making sure to maintain eye contact and gestures to show that I'm engaged	3.43	0.92	High Level
S3	I put myself in their shoes, listen attentively, and validate their	3.34	0.91	High Level

Item	Statements	Mean	SD	Interpretation
	emotions.			
S4	I make sure to maintain the patient's dignity by respecting their privacy and making sure, they feel valued and respected.	3.40	0.81	High Level
S5	I assess patient's knowledge and beliefs about depression and pay close attention to their responses and any misconceptions they might have.	3.40	0.85	High Level
S6	I systematically gather patient's health history, paying special attention to their mental health, emotional well-being, past experiences with depression, and any other mental health concerns.	3.26	0.70	High Level
S7	I observe and assess for signs and symptoms of depression by closely monitoring patient's behavior, emotions, and physical well-being.	3.34	0.73	High Level
S8	I observe and assess presence of suicidal ideation or self-harm.	3.11	0.90	Moderate level
S9	I utilized standard screening tools for depression (e.g. PHQ-9 and Beck's Depression Inventory) as part of my assessment process.	2.31	0.90	Low level
S10	I carefully evaluate and determine high priority patients that needs immediate referral to allied healthcare professionals (e.g. Psychiatrist, psychologist, mental health nurse, etc) for further assessment and evaluation.	2.97	0.98	Moderate level
Overall		**3.18**	**0.69**	**Moderate level**

Note: 3.25 – 4= High, 2.5 - 3.24= Moderate, 1.75 - 2.4= Low, 1 - 1.74= Very Low

In terms of skills, the study found that hemodialysis nurses in Iligan City have a moderate degree (**0.69)** of expertise in identifying depression among hemodialysis patients. In Table 3, it is evident that the nurses exhibited high levels of skill in establishing a secure setting for patients to articulate their thoughts and emotions, actively engaging in attentive listening, validating emotional experiences, upholding patient dignity, evaluating patient understanding and beliefs regarding depression, and closely monitoring indicators and manifestations of depression. Significantly, the use of depression-screening instruments in the evaluation procedure obtained lower ratings, with majority of the nurses falling into the lower skill levels for this item.

Table 4: Analysis of Test Scores, Nurses' Skills in Recognizing Depression in Hemodialysis Patients

Minimum	Median	Mean Score	Maximum	SD	Interpretation
12	33	31.828	40	6.887	Moderate Level

Score Range: High Level = 32.5 - 40.0, Moderate level = 25.0 - 31.5, Low level = 17.5 - 24.0, Very Low

The results in Table 4 show that the nurses' skills in recognizing depression in hemodialysis patients ranged from a minimum score of 12 to a maximum score of 40. The median score was 33, with a mean score of 31.83 and a standard deviation of 6.89 indicating a Moderate Level of performance of skills in recognizing depression in hemodialysis patients. Moreover, 50% of the respondents have scores at least 33 (Median = 33) out of 40 total points.

Based on these results, it can be interpreted that the nurses in Iligan City have a moderate level of skills in recognizing depression among hemodialysis patients. This suggests that while the nurses have some level of proficiency in identifying depression in this patient population, there may be areas for improvement in terms of enhancing their skills and knowledge in this area.

Attitude of Hemodialysis Nurses Towards Depression in Patients

To evaluate the nurses' attitudes towards recognizing depression in hemodialysis patients, the Revised Depression Attitude Questionnaire (R-DAQ) was utilized[12] (Haddad et al., 2015).

Table 5: Nurses' Attitudes towards Depression in the Context of the Three Dimensions

Variables	Minimum	Median	Mean Score	Maximum	SD	Interpretation
Professional Confidence	15	23	22.514	29	3.616	Neutral
Therapeutic Optimism	17	32	32.514	45	5.847	Neutral

Variables	Minimum	Median	Mean Score	Maximum	SD	Interpretation
Generalist Perspective	11	19	19.342	25	2.969	Positive
Total	**63**	**73**	**74.371**	**97**	**7.042**	**Neutral**

Score Range: Highly Positive = 92.4 - 110.0, Positive = 74.8 - 91.4, Neutral = 57.2 - 73.8, Negative=39.6 - 56.2, Highly Negative=22.0 - 38.6

The score of the respondents' attitudes towards hemodialysis patients is presented in Table 5 which shows the minimum, mean, standard deviation (SD), and maximum scores for each subscale.

In terms of Professional Confidence, the mean score was 22.52 with a standard deviation of 3.616, reflecting a neutral attitude. This suggests that nurses are not entirely confident in their ability to address depression among hemodialysis patients.

For Therapeutic Optimism, the mean score was 32.51 with a standard deviation of 5.847, also indicating a neutral stance. This implies that nurses might not be very optimistic about the effectiveness of therapeutic interventions for depression in this patient population. This finding is consistent with previous research indicating that nurses often do not use depression screening tools due to lack of information and time constraints.

However, the Generalist Perspective subscale showed a more positive attitude, with a mean score of 19.342 and a standard deviation of 2.969. This suggests that nurses are generally inclined to observe changes in patients' psychological and physiological conditions, aligning with findings from other studies.

Overall, the mean score for nurses' attitudes towards depression was 74.371 with a standard deviation of 7.042, indicating a neutral attitude. This suggests that while nurses have a generally good attitude, there is still room for improvement in enhancing their knowledge, skills, and attitudes in recognizing and managing depression among hemodialysis patients in Iligan City. The study highlights the need for targeted interventions and continuous education to better equip nurses in this regard.

Extreme Responses in the Knowledge, Skills, and Attitude (KSA) Questionnaires

This study aims to investigate the factors contributing to the extreme responses of nurses in the Knowledge, Skills, and Attitude (KSA) questionnaire, which warranted further exploration in the qualitative phase of the study.

In order to ensure the saturation of qualitative data and to delve deeper into the factors influencing the KSA questionnaire results of respondents with extreme responses, a conservative threshold of ±1.5 was established for identifying extreme responses or outliers in the dataset. This was done to obtain a sufficient number of respondents to qualify for the qualitative phase of the study. It suggests that any observation with an absolute z-score value greater than 1.5 should be considered an extreme response. In other words, if the z-score is more than 1.5 standard deviations away from the mean, either above or below, it is considered an extreme response.

Table 6: Detected Extreme Responses using Z-Score

ID	Variable Detected	Standardized Score	K Scores	S Scores	A Scores (PC)	A Scores (TO)	A Scores (GP)	A Scores (Overall)
A2	Knowledge	1.605	17	28	20	36	18	74
A6	Knowledge	1.932	18	29	21	42	19	82
G2	Knowledge	-1.661	7	37	27	24	20	71
G3	Knowledge	-1.661	7	40	25	29	19	73
G4	Knowledge	-1.988	6	40	26	34	19	79
N6	Knowledge	-1.661	7	35	23	32	17	72
A4	Skills	-2.879	9	12	25	28	22	75
G1	Skills	-2.298	8	16	27	17	19	63
N2	Skills	-2.734	11	13	23	28	19	70
A8	Attitude	3.213	15	35	29	43	25	97
A9	Attitude	1.651	14	27	24	38	24	86
G1	Attitude	1.615	8	16	27	17	19	63
M5	Attitude	2.645	15	38	28	45	20	93

Note: standardized score is above 1.5, K=Knowledge, S=Skills, A=Attitude, PC= Professional Confidence, TO= Therapeutic Optimism, GP= Generalist Perspective

The study aimed to identify and investigate the factors that lead to the extreme responses of respondents on the Knowledge, Skills, and Attitude questionnaire, which require further exploration based on

the z-score threshold of ±1.5. Upon analyzing the data using the z-score threshold of ±1.5, several extreme responses were detected as seen in Table 6.

In the Knowledge category, six respondents showed extreme responses, with two demonstrating significantly higher scores and four showing significantly lower scores, indicating potential gaps in understanding depression recognition. In terms of skills, three respondents had extreme responses, indicating lower skill levels in recognizing depression among hemodialysis patients compared to the rest. These respondents shared similar demographic profiles, being females and single. For attitude scores, four respondents had extreme responses, showing more positive attitudes compared to the rest. Interestingly, these respondents had diverse demographic profiles, including differences in age, sex, civil status, and current position. The study highlights that factors such as age, years of experience, sex, civil status, and current position appear to influence the extreme responses of hemodialysis nurses in the domains of knowledge, skills, and attitudes related to depression recognition.

Qualitative Findings

The extreme responses detected in the study's participants offer crucial insights that warrant further exploration. To delve deeper into these factors, qualitative in-depth interviews was conducted with the participants who demonstrated extreme responses during the quantitative phase of the research. Gaining a comprehensive understanding of these factors will enable the development of targeted interventions aimed at enhancing nurses' knowledge, skills, and attitudes in recognizing and managing depression, ultimately improving patient care and outcomes.

The investigation into the factors that affect the knowledge, skills, and attitude of hemodialysis nurses in recognizing depression has unveiled several emergent themes from the interviews with nurses who obtained extreme scores or provided extreme responses

Table 7: Overview of the Emerging Themes and Sub-themes

Knowledge	Skills	Attitude
Theme: Professional Development	Theme: Self-efficacy	Theme: Self-awareness
Sub-themes: Lack of Formal Training and Updates Guidance from Mental Health Professionals Emphasizing Depression in Hemodialysis Nursing Practice	Sub-themes: Communication Skills Skills Enhancement Training Experience in Caring for Patients with Depression	Sub-themes: Burn-out and Stress Management Personal Comfort Level Personal Experience in Dealing with Depression

Theme 1: Professional Development: Unveiling the Impact on Hemodialysis Nurses' Understanding of Depression in Their Patients

Professional development plays a crucial role in shaping the knowledge and skills of hemodialysis nurses, particularly in relation to understanding and addressing depression in their patients. This theme explores the impact of professional development on hemodialysis nurses' ability to recognize and manage depression in their patients.

Sub-theme 1: Lack of Formal Training and Updates

The sub-theme of Lack of Formal Training and Updates emerged as a significant factor affecting hemodialysis nurses' knowledge about depression among patients undergoing hemodialysis. Participants identified a lack of formal training and updates on the topic of depression as a barrier to their understanding and ability to handle depression in their patients. Several participants mentioned that they had not received specific training on how to handle depression in hemodialysis patients, either during their education or in their current workplace.

The participants expressed a need for formal training programs and seminars focused on depression, as they believed that exposure to such education would increase their knowledge and understanding of the condition. They noted that while they had received some general mental wellness seminars, these did not specifically address issues related to depression among hemodialysis patients. They highlighted the importance of ongoing education and emphasized that regular updates on the topic were necessary for nurses to stay informed and adept at managing depression in their patient population.

One of the nurses, Jane, highlighted the importance of exposure to training and seminars, emphasizing that the more educated and updated nurses are about depression, the more knowledgeable they become in recognizing and addressing it.

"With depression in hemodialysis patients and how to handle it there is nothing yet but we have mental wellness seminars as nurses provided by the hospital. Maybe from exposure to training and seminars. The more you are updated about depression the more you become knowledgeable. Formal training in handling patients with depression is really needed for nurses to learn" – Jane

Mae echoed this sentiment, suggesting that nurses need to receive ongoing education and updates on depression, as it may have been some time since they last studied the topic in their college days.

"Trainings and updates. It's been a while since we studied about depression in our college days and maybe nurses need to be updated from time to time." – Mae

Interestingly, some participants mentioned that the training they had received during their initial education or on-the-job training did not cover depression.

Christy pointed out the lack of formal training on depression provided by hospitals, noting that while nurses receive training on technical aspects of hemodialysiscare, they do not receive education on how to handle patients with depression.

"Trainings and seminars. They don't even provide trainings at the hospital. During the 2 months of training before you can be hired, you will be trained how to assess the patient's health status, operate the machines, and cannulate but no training is provided regarding depression." – Christy

Nichole emphasized the importance of mental health awareness training for hemodialysis staff, stating that nurses must be educated on depression in order to effectively address it in their patients.

"Number one reason is updates and mental health awareness training for the hemodialysis staff. Because for the nurses to be knowledgeable in depression they should be educated with depression, that's all. Most of the time it is about CKD and other complications and management for hemodialysis patients but not on depression" – Nichole

Sub-theme 2: Guidance from Mental Health Professionals

The current study explores the factors that influence hemodialysis nurses' abilities to identify and manage depression among their patients undergoing hemodialysis. Participants expressed their opinions on the need for mentorship from psychologists or psychiatrists and the lack of formal training opportunities in this area.

Jane's statement reflects the idea that nurses should receive support from mental health professionals, similar to how they have nephrologists to consult regarding the treatment of patients' physical health. This suggestion aligns with Watson's Theory of Human Caring, which emphasizes the importance of holistic care that addresses both the physical and emotional aspects of a patient's well-being (Watson, 2008).

"I think nurses should be mentored by mental health professionals as well. Like in the hemodialysis centerswe have a nephrologist to refer regarding the treatment of the patient, there should also be a psychologist or psychiatrist for the patients mental health not just focus on their physical signs and symptoms." – Jane

Mae's observation highlights the limited availability of formal training in handling patients with depression, as the hospital offers only a one-day stress management seminar. This could be due to insufficient training or lack of practical application of the knowledge gained in the seminars.

"In our hospital, we have mental wellness seminars but it's only a one day seminar about handling stress at work but not a formal training in handling patients with depression so it's a bit lacking for me."– Mae

Sub-theme 3: Emphasizing Depression Assessment in Hemodialysis Nursing Practice

The participants in the study emphasized the lack of emphasis on depression assessment in hemodialysis nursing practice. They mentioned that depression assessment is not a routine procedure in hemodialysis centers, and therefore, nurses are not exposed to assessing the mental health status of patients. This lack of routine assessment may contribute to a lack of knowledge about depression among hemodialysis nurses.

"Maybe if nurses assess depression as part of the routine in the care for hemodialysis patients, the nurses will also be more knowledgeable in depression as well because they can be exposed. So far, we only assess the physical health status of the patient before and after the hemodialysis treatment but it is rare to assess the patient's mental health status. So none of us were exposed to depression assessment as hemodialysis nurses." – Mae

Participants, Lenny and Christy also mentioned that formal training on assessing and addressing depression in hemodialysis patients was not available, and the management does not require or encourage attendance at such seminars.

"If it is a formal training about assessing and addressing depression particularly in our patients, there is none yet. Maybe it is not a routine procedure, that's why the management doesn't require or encourage us to attend those type of seminars."– Lenny

"Maybe it is not routine in hemodialysiscenters. Assessing depression is usually done in the clinic of psychologist and psychiatrist, not in hemodialysis centers. There are no consultants available for depression here at the hospital. The only goal is to dialyze the patient and have no complications after the treatment."– Christy

Theme 2: Empowering Confidence: The Role of Self-Efficacy in Hemodialysis Nurses' Skills to Identify Depression in Their Hemodialysis patients

This theme focuses on empowering confidence in hemodialysis nurses through the enhancement of their self-efficacy in recognizing depression in their patients.

Sub-theme 1: Communication Skills

The participants expressed feelings of inadequacy in assessing and discussing depression with their patients, primarily due to insufficient training and knowledge on the subject. They also mentioned that they struggle with communicating about depression without offending their patients or giving incorrect information.

The quotes from the participants in the study highlight the importance of communication skills in identifying depression in hemodialysis patients. Leo, Shane, and Lorie all express a lack of confidence in approaching the topic of depression with their patients, citing a lack of knowledge and fear of offending or misinterpreting the patients. This reluctance to communicate effectively about mental health issues can hinder the identification and treatment of depression in hemodialysis patients.

"Maybe I'm not confident because I haven't tried to assess patients with depression and I don't have enough knowledge about depression. I'm afraid how to talk without offending the patient and watcher. There is no one who trains hemodialysis nurses in assessing patients with depression." – Leo

"There are many instances that I feel awkward in talking about depression to my patients. I don't know how to open up to them or ask them about depression for fear of offending them or maybe I will give the wrong answer or they misinterpret me."– Shane

"That's why I am not confident when communicating with patients about depression. That's a topic I myself do not even contemplate on because I am not knowledgeable about it."– Lorie

The findings suggest that hemodialysis nurses' self-efficacy in identifying depression among their patients is influenced by their communication skills and knowledge about depression. The lack of formal training and support in this area may hinder their ability to effectively assess and address depression in their patients, which is contrary to the principles of Watson's Theory of Human Caring that emphasizes empathy, unconditional positive regard, and a holistic approach to patient care.

Sub-theme 2: Skills Enhancement Training

The sub-theme of skills enhancement training in relation to empowering confidence in hemodialysis nurses to identify depression in their patients is a crucial aspect that has been highlighted by the nurses themselves. The participants expressed that a lack of consistent practice and training opportunities in depression assessment hampers their confidence and proficiency in identifying depression in their patients. They believe that targeted training and more focus on mental health aspects of hemodialysiscare would be beneficial.

Paige emphasizes the importance of experience as a determinant of skill mastery, drawing on the analogy of cannulation to illustrate that consistent practice leads to improvement. However, the lack of regular practice in evaluating patients for depression prevents nurses from feeling confident in this particular skill.

"Experience is the most significant determinant. Similar to the process of cannulating, consistent practice leads to improvement. However, in the case of evaluating patients for depression, the lack of regular practice prevents the mastery of that particular skill."– Paige

Shane reflects on the impact of skills training, noting that his lack of attendance at trainings focused on depression assessment has resulted in a lack of confidence in this area.

"Skills training number is number one factor. I don't attend trainings regarding depression assessment, that's why I'm not confident." – Shane

Leo also points out the limited focus on mental health in the training of hemodialysis nurses, leading to a deficiency in both experience and knowledge regarding depression in these patients.

"The focus is only on nursing care for Chronic Kidney Disease, not on the mental health of patients. I just lack experience and training about depression in hemodialysis patients." Leo

Shane also voices the belief that training in assessing patient's depression is essential for boosting confidence in caring for their mental health needs.

"That's all, hemodialysis nurses should be trained in assessing patient's depression so that it can boost our confidence as we care for our patient's mental health." – Shane

Sub-theme 3: Experience in Caring for Patients with Depression

The nurses have emphasized the critical importance of the sub-theme of Experience in Caring for Patients with Depression, namely in boosting confidence in hemodialysis nurses to recognize depression in their patients.

The quotes provided by Paige and Christy highlight the lack of experience and resources in identifying and treating depression in hemodialysis patients within their unit. This lack of exposure to patients with depression can greatly impact the confidence and self-efficacy of nurses in identifying and addressing mental health concerns in their patients.

"Here at the hemodialysis unit we rarely encounter patients who are diagnosed and treated with depression. That is why we are not exposed to patients undergoing hemodialysiswith depression."– Paige

"Maybe it is not routine in hemodialysis centers. Assessing depression is usually done in the clinic of psychologist and psychiatrist, not in hemodialysis centers. There are no consultants available for depression here at the hospital. The only goal is to dialyze the patient and have no complications after the treatment."– Christy

Theme 3: Self-Awareness: Its Impact on Hemodialysis Nurses' Attitude Towards Depression in Hemodialysis patients' Care

Self-awareness plays a crucial role in the way hemodialysis nurses approach the care of their patients who are struggling with depression. This theme explores how the nurses' own emotional well-being impacts their attitude towards depression in their hemodialysis patients. Sub-themes such as burn-out and stress management, personal comfort level, and personal experience in dealing with depression shed light on the complex relationship between self-awareness and the quality of care provided to individuals undergoing hemodialysis.

Sub-theme 1: Burn-out and Stress Management

The quotes from Lorie and Kate highlight the importance of nurses' mental health status in shaping their attitudes towards patients with depression. Lorie suggests that nurses who are stressed or depressed themselves may struggle to provide optimal care to patients with depression, while Kate emphasizes the role of mental health in influencing nurses' attitudes.

"Maybe the mental health status of the nurses will matter. If the nurse has a high stress level and they themselves are depressed, they don't want to deal with patients with depression, but if their mental health is okay, their approach to patients with depression will be quite positive." – Lorie

"It starts with the nurse's mental health status. If her mental health is okay, she can handle stress and her attitude is more positive, but if they are stressed, the nurse's attitude towards depression is quite negative." – Kate

The participants in these interviews suggest that the mental health status of hemodialysis nurses plays a crucial role in their attitude towards patients with depression. When nurses are mentally healthy and have a positive outlook, they are more likely to have a favorable attitude towards patients with depression. However, when nurses are burnt out, stressed, or experiencing their own mental health issues, they may have a negative attitude towards patients with depression, making it challenging for them to provide effective care.

Sub-theme 2: Personal Comfort Level

Some nurses are comfortable dealing with patients with depression, while others may avoid such situations due to their personal discomfort or lack of knowledge about depression.

Lorie's statement highlights the importance of the nurse's personality in assessing and dealing with patients with depression. Some nurses may feel comfortable and confident in their abilities to address mental health issues, while others may feel passive and prefer to avoid such situations due to potential toxicity in the workplace. This reluctance may stem from a lack of knowledge about depression, as mentioned by Lorie.

"It depends on the personality of the nurse. There are nurses who are comfortable to assess or deal with patients with depression. There are also others who are passive. It's more convenient for them to just avoid that situation because they might be toxic on duty. Another reason is that they are not comfortable because they are not knowledgable about depression." – Lorie

Leo brought up the idea of personal comfort in opening up to others and how this may affect their attitude towards learning and addressing depression in patients.

"Maybe if they are comfortable or not about depression. Personally, I'm not comfortable opening up to others like I'll rather keep my personal problems to myself. Maybe my attitude towards my learning is affected, like if I'm not confident because I'm not knowledgable about depression." – Leo

Sub-theme 3: Personal Experience in Dealing with Depression

The participants in these interviews suggest that nurses' personal experience with depression could influence their ability to recognize and empathize with patients experiencing depression. Those with personal experience may be better equipped to understand and relate to their patients' feelings and needs.

Liann and Kate emphasized the importance of nurses having personal experience with depression as it enables them to empathize and relate to the feelings and experiences of their patients. This can lead to a more compassionate and understanding approach in providing care for patients undergoing hemodialysis.

"Maybe if nurses themselves have personal experience with depression, they will be able to appreciate and recognize if their patient is depressed. Like they can relate more to what the patient is feeling or going through…" – Liann
"Another factor is the personal experience of the nurse about depression. The more exposed he is, the more he knows how to handle and explain to the patient. Like me, I have a nephew who has been diagnosed with depression, so I can relate to my patients."– Kate

However, Paige pointed out that the lack of exposure to patients with depression in their hemodialysis unit hinders their ability to effectively address and manage depression in their patients.

"As long as skills are related to experience. Here at the hemodialysis unit we rarely encounter patients who are diagnosed and treated with depression. That is why we are not exposed to patients undergoing hemodialysis with depression" –Paige.

In conclusion, the qualitative results of the study on the factors influencing the knowledge, skills, and attitudes of hemodialysis nurses in recognizing depression among hemodialysis patients in Iligan City triangulate and validate the quantitative findings, providing a deeper understanding of the complexities and challenges in this area of nursing practice. By integrating quantitative and qualitative data, the study offers a comprehensive analysis that contributes to the development of evidence-based interventions and strategies to enhance the care and well-being of hemodialysis patients.

DISCUSSION

The study revealed that hemodialysis nurses in Iligan City exhibit varying levels of knowledge, skills, and attitudes towards recognizing and managing depression in their patients. Overall, their knowledge level was found to be average, indicating a basic understanding but with room for improvement. This finding aligns with other studies, such as[16] Barba, Gautam and Knotts (2022) which reported moderate knowledge levels among nurses about depressive disorders. In contrast, another study found higher knowledge levels among nurses dealing with chronic illness patients, suggesting variability based on patient demographics and conditions[17] (Sumari *et al.*, 2023).

In terms of skills, the nurses demonstrated moderate expertise in identifying depression, excelling in creating supportive environments and active listening. However, studies like[17] Cukor et al. (2007) indicate a

need for more confidence and skills in managing depression, suggesting that ongoing training and education could enhance proficiency. This need for enhanced skills is critical for improving patient care and outcomes.

The nurses' attitudes towards depression were generally neutral, highlighting a potential area for growth. This finding is consistent with research by[19,20] Hurley et al. (2023) and Micallef, Sammut and Grech (2022), which noted nurses' unpreparedness and lack of confidence in managing mental health issues. Continuous professional development is essential to maintain and enhance nurses' mental health care capabilities. Research by[21,22] Sreeram, Cross and Townsin (2023) and Kigozi-Male, Heunis and Engelbrecht (2023) underscores the significant impact of stigma and knowledge on nurses' attitudes towards mental health. Implementing targeted training programs and fostering a supportive learning environment can improve nurses' ability to care for patients with depression, ultimately leading to better patient outcomes.

Moreover, the study underscores the critical need for mental health education and training for healthcare professionals, particularly nurses. This aligns with existing research, such as[23] Kolb, Liu and Jackman (2023) which found that nurses with more mental health training were better at identifying and addressing depression. Similarly,[24] Endacott and Blot (2022) highlighted that mental health education improves patient outcomes, and Kigozi-Male, Heunis and Engelbrecht (2023) reported that trained nurses had more knowledge and positive attitudes towards mental health issues[25]. Hsiao et al. (2023) also emphasized the necessity for ongoing mental health training to boost nurses' confidence and competence.

Conversely,[26] Alsolais et al. (2023) noted that higher depression knowledge among nurses did not always correlate with better clinical outcomes, suggesting that factors like attitudes and resource availability also play a role. This indicates a need for a comprehensive approach to mental health education, encompassing both knowledge and practical skills.

The study further highlights the gap in mental health training for nurses handling patients with chronic illnesses such as hemodialysis.[27] Tomaszewska et al. (2023) found that nurses felt unprepared for their patients' psychological needs, leading to burnout and reduced care quality. This calls for formal training and guidance from mental health professionals[28]. McGregor et al. (2023) demonstrated that nurses trained in mental health care felt more confident in managing depression, suggesting the positive impact of such programs.

Overall, the study emphasizes the necessity for formal training and collaboration with mental health professionals to enhance the care quality for hemodialysis patients with depression. Previous research, such as[18] Cukor et al. (2007) indicates that depression is prevalent yet often underdiagnosed in these patients due to insufficient routine assessment and training[29]. Klein et al. (2020) stressed the importance of routine depression screening, showing that it leads to better patient outcomes and adherence to treatment. Incorporating these findings into practice can significantly improve the mental health care provided to hemodialysis patients.

In conclusion, this study highlights the critical need for comprehensive mental health education and ongoing training for hemodialysis nurses. Enhancing their knowledge, skills, and attitudes towards managing depression through targeted training programs, continuous professional development, and collaboration with mental health professionals can significantly improve patient outcomes. Addressing the gaps in mental health training and providing consistent support can empower nurses to better recognize and manage depression, ultimately leading to higher quality care for hemodialysis patients.

CONCLUSION

The study has provided valuable insights into the knowledge, skills, and attitudes of hemodialysis nurses in Iligan City when it comes to recognizing depression among patients. The findings indicate that although these nurses possess a moderate degree of knowledge and skills in detecting depression, there are still areas that require enhancement, notably in acknowledging the effectiveness of non-pharmacological therapies. The nurses exhibited a generally impartial position in terms of attitudes, suggesting potential for improving self-assurance and positivity in the management of depression in hemodialysis patients.

The results of this study indicate that hemodialysis nurses in Iligan City may benefit from improving their abilities to establish a safe and supportive atmosphere for patients to openly discuss their feelings and ideas around depression. Moreover, the favorable attitude towards the Generalist Perspective demonstrates a readiness to approach patients in a comprehensive manner, including both their psychological and physiological components.

The implications of this study for the nursing profession as a whole highlight the importance of addressing the gaps in knowledge, skills, and attitudes related to depression recognition among hemodialysis nurses. By identifying areas for improvement and implementing targeted interventions to enhance their capabilities, nurses can significantly contribute to improving the quality of care and overall well-being of hemodialysis patients. Furthermore, the study underscores the need for a multidisciplinary approach in caring for patients with comorbid conditions, such as depression, emphasizing the importance of collaboration between healthcare providers to address the complex needs of this patient population. Ultimately, enhancing the

knowledge, skills, and attitudes of hemodialysis nurses in recognizing and managing depression can lead to improved patient outcomes and enhanced overall quality of care within the nursing profession.

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Conflict of Interest

The authors declare that they have no competing interests.

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