Journal of World Health Research
Vol. 3 No. 10 (2026): November 2026
https://doi.org/10.71020/0tmp9647
Original Article

Effective knowledge of back care techniques among nurses at Kiruddu Regional Referral Hospital. A cross-sectional study.

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ABSTRACT

Background:

The study aimed to evaluate nurses' knowledge of back care techniques among nurses at Kiruddu Regional Referral Hospital.

Methodology:

A descriptive cross-sectional study was conducted among nurses at Kiruddu Regional Referral Hospital. From a target population of 300 nurses, 50 were selected using simple random sampling. Data were obtained using structured questionnaires and a visual analogue pain scale. Instruments were pretested to establish reliability and validity. Data were coded, entered into Microsoft Excel, and analyzed using SPSS. Frequencies and percentages described prevalence, while chi-square and logistic regression assessed associations between low back pain and selected factors. Ethical approval, consent, privacy, confidentiality, and anonymity were observed.

Results:

Among the 50 respondents, 35 (70.0%) were female, and 15 (30.0%) were male. Age distribution showed that respondents aged 40-44 years constituted the largest proportion, 15 (30.0%), followed by those aged 35-39 years, 10 (20.0%), and 30-34 years, 7 (18.0%). Regarding education, 25 (50.0%) had bachelor's degrees, 19 (38.0%) had diplomas, 4 (8.0%) had certificates, and 2 (4.0%) had master's degrees or higher. Marital status showed that 33 (66.0%) were single and 17 (34.0%) were married/cohabiting. Concerning work experience, 19 (38.0%) had worked for 4-6 years, 13 (26.0%) for 7-10 years, 11 (22.0%) for more than 10 years, and 7 (14.0%) for less than 3 years. Overall, 38 (76.0%) respondents reported severe low back pain in the previous two years, compared with 12 (24.0%) who did not. Among those reporting severe low back pain, 30 (78.9%) were female, and 8 (21.1%) were male; 26 (68.4%) were single, and 12 (31.6%) were married/cohabiting.

Conclusion:

Nurses demonstrated good knowledge of back care techniques, but inadequate training, staffing, equipment, and space limited effective implementation.

Recommendation:

Hospital administration and nursing management should conduct regular back-care training and provide adequate equipment and space for safe back-care practices.

Keywords: *Back care techniques, Safe patient handling, Body mechanics, Occupational ergonomics, Patient transfer, Nursing practice*.
Submitted: *September 15, 2026* ***Accepted:*** *October 17, 2026* ***Published:*** *November 1, 2026*
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BACKGROUND OF THE STUDY

Because nurses are frequently exposed to activities that place physical demands on the lower back, appropriate back-care practices are important for preventing occupational LBP. Nurses are routinely involved in lifting, transferring, and repositioning patients, as well as maintaining prolonged static postures during patient care (Waters & Rockefeller, 2010). Proper body mechanics and safe patient-handling techniques can therefore help reduce unnecessary strain on the lower back.

Education and training in biomechanics, proper lifting techniques and safe patient handling are among the commonly recommended approaches to preventing occupational LBP. Manual handling of patients is a skilled activity that requires appropriate knowledge, training and practice to ensure that it is performed safely (Kozier, 2008). Nurses are expected to apply appropriate body mechanics when lifting or transferring patients and when performing other physically demanding clinical activities. However, knowledge of back-care principles does not necessarily guarantee their consistent application in clinical practice.

The ability of nurses to apply appropriate back-care techniques may be influenced by workplace conditions. Heavy workloads, inadequate staffing, limited availability of patient-handling equipment, insufficient breaks, and environmental constraints may make it difficult for nurses to consistently apply recommended techniques. Consequently, prevention of LBP may require a combination of education, ergonomic interventions, teamwork, appropriate staffing, suitable work schedules, and access to occupational health services rather than relying on education alone (Frank et al., 1996).

In developed countries, nurses may have greater access to occupational health surveillance and workplace safety programmes, whereas such services may be less accessible in resource-constrained settings.

The study aimed to evaluate effective knowledge of back care techniques among nurses at Kiruddu Regional Referral Hospital.

METHODOLOGY

Research design

A cross-sectional and descriptive study design was used in order to obtain the necessary data on the prevalence of work-related low back pain among nurses in Kiruddu Referral Hospital. This research design ensured that the evidence obtained effectively addressed the study problem logically and as unambiguously as possible. Descriptive and cross-sectional designs have the advantage of producing a good number of responses from a wide range of people.

Study setting

The study was carried out at Kiruddu Referral Hospital, which is one of the public hospitals in Uganda. The hospital was officially opened to the public on May 16th, 2016. The hospital is in the neighborhood of Kiruddu, on Buziga Hill, in Makindye Division, one of the five administrative units of the Kampala Capital City Authority. This is approximately 13 kilometers (8.1 mi) by road, southeast of the Mulago National Referral Hospital. The approximate coordinates of Kiruddu General Hospital are 0°14'53.0"N, 32°36'45.0"E (Latitude:0.248056; Longitude:32.612500). Kiruddu Hospital offers 14 clinical services that are operated under the Department of Medicine and Burns Unit, and these include: hypertension, thyroid, diabetes, kidneys, heart problems, infectious diseases, skin problems, diseases of the brain, lungs, and burns.

Study population

The target population in this study comprised the nurses in the hospital who were in a position to give their experience on work-related low back pain.

Sampling methods used

The study used a simple random sampling technique to meet the desired sample. This method was adopted due to its advantage of being more efficient in selecting an unbiased random selection and a representative sample from a relatively larger population that can be important in drawing the conclusions.

Sample Design and Selection

Kothari (2004) defines a sample as a subset of predetermined size from a population of interest. According to the records received from Kiruddu Hospital during the pilot study, as well as the media reports aired by NBS television on 26th August 2016, it was established that Kiruddu Hospital has 300 nurses. Therefore, out of this, a sample of 50 respondents was selected. This was arrived at using Yamane (1967) formula shown below,

$$n = \frac{N}{1 + N(e)^2}$$

Where;

n= sample; N= Population = 300; e= confidence level of 12.9%

n = 3000/ 1+300 (0.0167)

n = 300/ 6.01

n = 49.9$n = \frac{z^2_{\frac{\alpha}{2}} pq}{e^2}$

n = 50 respondents

The above sample was selected using a simple random sampling technique, which was used to arrive at the potential respondents. This was used to gather information from nurses depending on their accessibility and availability.

Method of data collection and Instruments

Data were collected using questionnaires and a visual analog scale, which is a pain assessment tool. These were the main data collection instruments that were employed because of the advantages they have for upholding confidentiality, time savings, and being the best source of primary data. In the questionnaire, both open- and closed-ended questions were developed in line with the objectives and literature review on variables. This was so as to allow the expression of different respondents' views and opinions and to ensure wide coverage of opinions from the respondents.

Study variables

The study had three groups of variables; these were: independent variables, intervening variables, and the dependent variable. These were as illustrated below;

Independent variables

Under the independent variables, the study primarily focused on ergonomic factors associated with nursing work, as these factors are considered important contributors to low back pain among nurses. The ergonomic factors looked at included the effects of long working hours without sufficient

breaks on the occurrence of LBP, and long standing posture (prolonged standing).

Repositioning patients in bed, leaning over patients, lifting heavy objects, lifting patients from bed, ambulating patients, restraining struggling patients, and work overload. Apart from work-related ergonomic factors, individual factors, mainly the demographic factors such as age, gender, and physical status of the respondents, were also considered to supplement what had been collected under ergonomic factors.

Intervening Factors

The study also looked at the effect of intervening factors such as knowledge of back care techniques and treatment options on the occurrence of low back pain among nurses in Kiruddu Hospital.

Dependent variable

The dependent variable in the current study was effective knowledge of back care techniques among nurses in Kiruddu Hospital.

Data collection procedure

Approval to conduct the study was first obtained through an introductory letter from Health Tutors College. The letter facilitated the introduction of the study to the respondents and provided an opportunity to explain the purpose and importance of the study. The management of Kiruddu Regional Referral Hospital was also informed about the study, and permission was obtained before commencement of data collection. Furthermore, before the participation of different participants, verbal consent was also sought from each respondent before taking part in the study. Ethical considerations such as privacy and confidentiality of information were assured. This means that participation was only among those respondents who had consented to participate in the study. Interview guides and questionnaire were used to generate opinion about nurses' experiences on low back pain at work places.

Reliability and Validity

The research instruments were pretested to ensure their reliability, validity, and relevance in regard to meeting the set objectives of this study.

Reliability testing

Reliability refers to consistency or reproducibility of measurements. Reliability of instruments was tested using a test- retest method done within a time lapse of one week. According to Amin (2005), test-retest reliability can be used to measure the extent to which instruments produce consistent scores when the same group of individuals is repeatedly measured under the same conditions. In this study, the questionnaire was first pre-tested before carrying out the data collection. The pre-test was carried out among 5 respondents from Mulago Hospital, which has the same characteristics as Kiruddu. This enabled assessment of whether the questions elicited the intended responses. The pre-test findings were discussed with the supervisor, who assessed the content validity and reliability of the instrument. Based on the pre-test results, necessary modifications were made to improve the questionnaire items. A Cronbach's alpha correlation coefficient greater than 0.5 was considered acceptable, indicating that the instrument had adequate reliability and was suitable for use in the study.

Validity testing

According to Thatcher (2010), validity is the best available approximation to the truth or falsity of a given inference, proposition, or conclusion. Validity testing of instruments was done using the inter-rater content validity method using five individuals from the study area. The Content Validity Index (CVI) for instrument, which was acceptable for use, was that one that was set at 0.7 or higher in order to. Under validity, experts, including the study supervisor, reviewed the data collection instruments and provided guidance to ensure that the tools were appropriate and adequately addressed the study objectives.

Data management

Data collected were captured in a Microsoft spreadsheet, where they were coded to check for errors and inconsistencies. A copy of the data was stored on a backup device like a flash disk or an external hard drive for emergency cases, if any. For instance, the data could be corrupted by a virus, or the laptop could be stolen.

Data analysis

Data collected on the prevalence of work-related low back pain among the nurses in Kiruddu Regional Referral Hospital were analyzed as follows:

For this objective, which required establishing the prevalence of low back pain among Nurses at Kiruddu Regional Referral Hospital, data were analyzed using statistics like percentage distribution, frequencies, and presented using charts and tables. Under this section, cross-tabulations were also performed using chi-square and logistic regression statistics.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) and Microsoft Excel to generate interpretable results. The findings were presented using appropriate tables, charts, graphs, and other relevant forms of data presentation. Pearson's Chi-square statistic, which was used to determine the nature of the relationships between the prevalence of LBP among nurses in relation to the selected independent variables such as their age,

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education, designation, among other socio-economic factors, was in the following form;

$$\chi_a^2 = \sum_{i-1}^{r} \sum_{j-i}^{k} \frac{(O_{ij-} E_{ij})^2}{E_{ij}}$$

Where:

O_{ij} is the observed frequency
E_{ij} is the expected frequency assuming independence
k=Number of categories of prevalence of LBP among nurses
r=Number of categories of independent variables (socio-economic factors and personal attributes)

The logistic regression model fitted to determine the effect of covariates on the probability of prevalence of LBP among nurses, in order to establish the relationship between the dependent and explanatory variables, was in the following form;

$$Logit(y) = In[\frac{pi}{1-pi}] = b_0 + b_1x_1 + b_2x_2 + ...+ b_kx_k + e_i \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Where y is the dependent variable (prevalence of LBP among nurses)
b0 is the constant associated with the independent variable
b_1, b_2...b_n are the coefficients associated with the independent variables
x_1, x_2…x_n are the independent variables (socio-economic factors and demographic factors such as education level, marital status, gender, age group, designation, among others.

Ethical considerations

Standard research ethics were observed. Permission to carry out this study was sought from Health Tutors College by obtaining an introductory letter, which was used to get permission from the Mulago Hospital Research and Ethics Committee; an approval letter was issued by the chairperson of the committee. Consent was obtained from the selected respondents at Kiruddu Regional Referral Hospital before the commencement of data collection. Strict confidentiality and anonymity of the research subjects were observed; for instance, no names of study participants were disclosed. The confidentiality and the anonymity of respondents' responses that were unveiled were also respected. The results were only used for the intended academic purpose and nothing else.

RESULTS

Demographic characteristics of the respondents

This section presents the distribution of respondents' socio-demographic characteristics. Characteristics of respondents have a very significant role to play in expressing and giving the responses about the problem. In this study, a set of personal characteristics, namely age, gender, marital status, highest level of education, and religion, was collected from fifty (50) respondents from Kiruddu Hospital and was examined.

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Table 1: Socio-demographic characteristics of respondents

Characteristics	Have you ever experienced severe LBP in the last 2 years?					
	Yes		No		Total	
	n=38	%	n=12	%	N=50	%
Gender						
Female	30	78.9	5	41.7	35	70.0
Male	8	21.1	7	58.3	15	30.0
Age						
Below 24 years	3	7.9	1	8.3	4	8.0
25-29 years	7	18.4	0	0.0	7	14.0
30-34 years	6	15.8	3	25.0	7	18.0
35-39 years	7	18.4	3	25.0	10	20.0
40-44 years	11	28.9	4	33.3	15	30.0
45-49 years	3	6	1	8.3	3	6.0
Above 49 years	1	2	0	0.0	2	4.0
Education attainment						
Certificate	3	7.9	1	8.3	4	8.0
Diploma	16	42.1	3	25.0	19	38.0
Bachelors degree	17	44.7	8	66.7	25	50.0
Master's degree and above	2	5.3	0	0.0	2	4.0
Marital status						
Single	26	68.4	7	58.3	33	66.0
Married/ Cohabiting	12	31.6	5	41.7	17	34.0
Separated/divorced	0	0.0	0	0.0	0	0.0
Time spent working in the medical field as a nurse						
Less than 3 years	5	13.2	2	16.7	7	14.0
4-6 years	14	36.8	5	41.7	19	38.0
7-10 years	11	28.9	2	16.7	13	26.0
Above 10 years	8	21.1	3	25.0	11	22.0
Total	**38**	**100**	**12**	**100**	**50**	**100**

Source: Fieldwork data, 2019

Distribution of the respondents by gender

The research study sought to establish the gender of respondents who participated in this study. This was mainly aimed at establishing the level of participation for both sexes in order to avoid bias. The results for gender distribution of the 50 respondents, as shown in Table 4.1, indicated that the participation of females in the research study was slightly higher than that of males (35 females and 15males) but satisfactory. This, hence, indicates that there was no bias in participation in this research. These findings seem to suggest that the nursing profession is more dominated by females. Furthermore, the results indicated that 78.9% of females and 21.1% of males reported having experienced Low Back Pain in the last 2 years.

Distribution of the respondents by age

The research study also sought to establish the age of the respondents who participated in the study. The distribution of the population by age is one of the most important characteristics in understanding their views about particular problems (Vostrikova, 2014). Age indicates the level of maturity of individuals. Therefore, age was important to examine the responses. The age results of the respondents from the participants who took part in the study, as shown in Table 4.1, show that the age group of participants was

dominated by those within the age group of 40 to 44 years, and the lowest number was among those respondents who were aged 49 years and above; this can be explained by the fact that most managers are within that age bracket, whose work roles are different from bedside nursing in the young age category. This age distribution could have been attributed to the fact that the nursing profession is a very sensitive work that needs more energetic people. The finding on age suggests that age is a demographic factor that is associated with LBP among nurses and that most nurses who participated in the study were mature but still energetic. According to Victoria, Manukyan, and Larisa (2015), age contributes to the formation of psychological development in maturity and adulthood development for self-management. Therefore, it can be concluded that since most of the respondents were above 20 years, the respondents were mature enough and able to self-manage when answering questions without undue influence from other persons.

Distribution of the respondents by education background

Education is one of the most important characteristics that might affect the person's attitudes and the way of looking at and understanding any particular social phenomena. In a way, an individual responds, is likely to be determined by his or her educational status and therefore it becomes essential to know the educational background of the respondents. The results suggest that a higher percentage (48.6%) of respondents had at least attained bachelor's degrees, followed by diploma-level education, which accounted for 26.7% of the responses.

Distribution of the respondents by marital status

Marriage is one of the most important social institutions. The perceptions and attitudes of a person can also differ by the marital status of the person because marriage might make the person a little more responsible and mature in understanding and giving responses to the questions asked. The details of the marital status of the respondents from the nurses in Kiruddu Hospital indicate that 60% of respondents were single, while 40% were married. Among these, 68.4% of the singles and 31.6% of married respondents reported having ever experienced severe low back pain.

Distribution of the respondents by the time spent working as a nurse

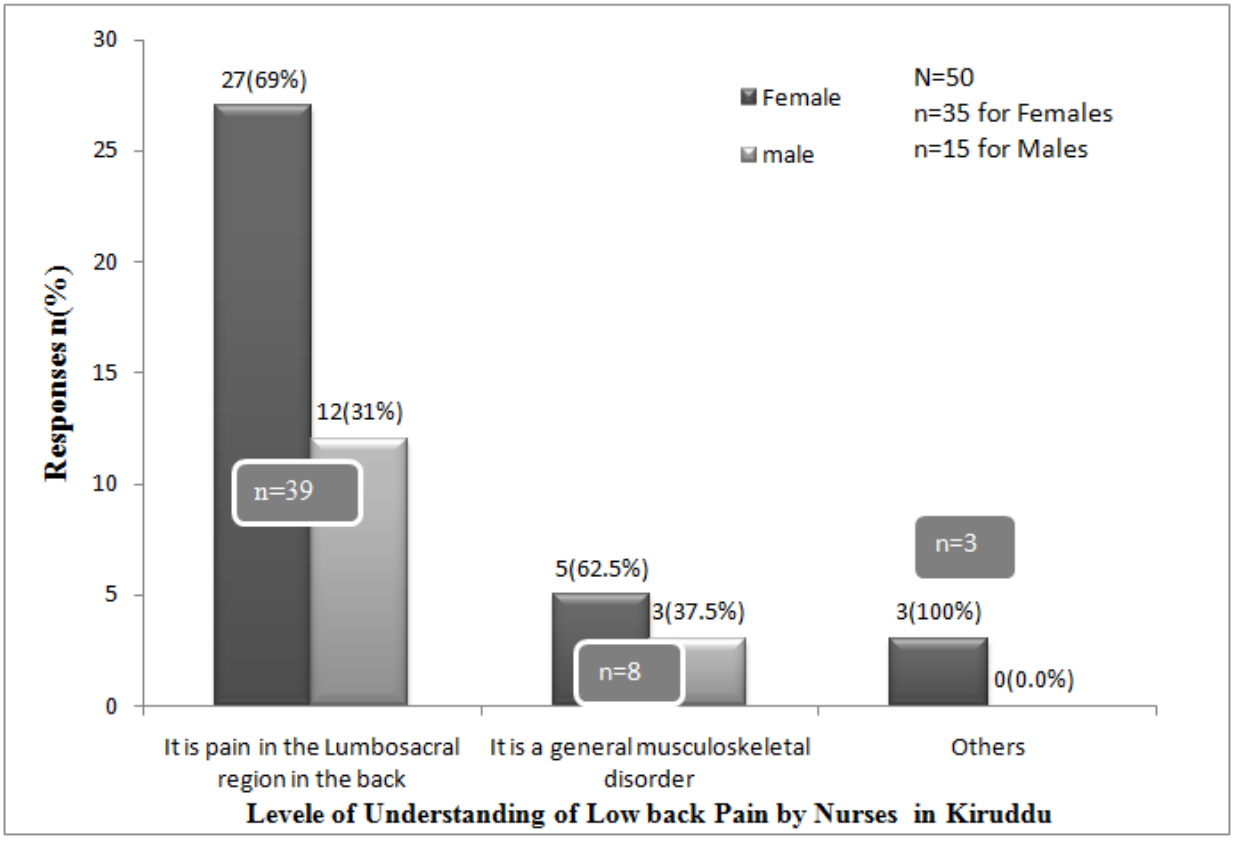
Investigations on the period the respondents had been working as nurses were also carried out. The reason for this was to find out the level of experience of the respondents in their professional work and how they have been able to deal with low back pain related to their work. The results, as shown in Table 4.1, show that most of the respondents (33.3% of males and 40% of females) have been in the medical field for a period of 4-6 years, whereby most of them reported having been transferred from Mulago Hospital to Kiruddu Hospital at the time they started working in 2016. Among the respondents, 36.8% reported having experienced severe Low Back Pain in the last 2 years.

Knowledge on Low Back Pain among nurses

The respondents were asked to give their views on how they understood low back pain. The results indicated that a big number of females (69%) and 31% of male respondents believed that LBP is pain in the Lumbosacral region in the back. While 62.5% of females and 37.5% of males stated that LBP is a general musculoskeletal disorder. However, 8.6% of female respondents had different explanations of LBP, which were classified as others.

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Figure 1: Knowledge on Low Back Pain



Treatment remedies being used by the nurses at Kiruddu Hospital to combat the problem of low back pain

The study also investigated the remedies for low back pain mostly used by nurses in Kiruddu Hospital. However, according to various nurses, treatment or remedies for LBP are administered based on the type of LBP that one is suffering from. Individual preferences for medication were also raised to be the major consideration as well as economic status of the patient. In the current study, the following remedies were identified as the main measures in combating LBP.

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Table 2: Remedies in combating low back pain among the nurses in Kiruddu Hospital

Back care techniques	Frequency	Percentage
Sleeping/resting/ Lying down	36	72.0
Taking a break	32	64.0
Chiropractic	32	64.0
Wearing a brace	31	62.0
Taking painkillers	29	58.0
Stretching	27	54.0
Yoga	25	50.0
Mild exercise	24	48.0
Physiotherapy	22	44.0
Movement	22	44.0
Others (specify)	17	34.0
Supporting the back	16	32.0
Acupuncture	12	24.0
Reflexology/massage	3	6.0

Multiple responses were used.

The findings indicated that rest was the most common remedy used by 72% of nurses in Kiruddu Hospital. However, big numbers of nurses also preferred taking a break from work, use of chiropractic care techniques, wearing braces and stretching or exercise as the remedy to LBP. Also, about 44% were using Interventional pain management techniques such as physiotherapy, as well as taking painkillers as a remedy for LBP. Clinically, it is believed that painkillers such as Aspirin, ibuprofen, and naproxen are anti-inflammatory medicines that alleviate low back pain caused by swollen nerves or muscles to offer faster relief.

According to the report by National Institute of Occupational Safety and Health (2007) and scholars such as Hong Kong", Waddell, et al (1993), revealed that a big number of nurses preferred self-management programs such as exercise and complementary and alternative medicine rather than using interventional pain management techniques. According to the findings, exercise appeared to be useful for preventing low back pain. This is because many preferred it as probably effective in preventing recurrences in those with pain that had lasted for more than six weeks. Based on the findings, it was found that a variety of exercise programs such as physiotherapy, walking, and aerobic exercise resulted in both clinically and statistically significant improvements in outcomes for patients with chronic back pain.

Various scholars have documented on a number of remedies for instance, regular exercise, over the counter prescription among others that are used by nurses to combat the low back pain. For instance, while carrying out a study on "the role of fear-avoidance beliefs in chronic low back pain and disability among nurses in

.

However, according to the study by Maul et al, (2003), the most common medications for low back pain according to their study was over the counter prescription. It was found that a big number of nurses preferred use of painkillers such as aspirin, ibuprofen, naproxen, and acetaminophen.

Recommendations for best back care techniques

The respondents were also requested to make recommendations for best back care techniques that, if adopted, could help in reducing the cases of high prevalence of LBP which occur as a result of occupation-related factors.

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Table 3: Recommendations for best back care techniques

Recommended back care techniques	Frequency	Percentage
Lifting together as a team	46	92
Active patient to actively lift themselves	35	70
Use of correct body mechanics	32	64
Using devices for lifting and transferring	24	48
Use of asymmetric lifting	21	42
Others (please specify)	14	28

Multiple responses were used.

The findings indicated that 92% of respondents recommended that lifting of patients should be done together as a team. This is because it is very crucial when nurses are executing their daily tasks. However, others recommended that patients actively lift themselves, use correct body mechanics, use devices for lifting and transferring, and use asymmetric lifting.

DISCUSSION

In evaluating the effective knowledge of back care techniques among nurses in Kiruddu, the current study revealed that the common remedy for LBP used by nurses, as reported by 72% of respondents, was resting. Other remedies included taking a break, physiotherapy, and use of self-medication (for instance, use of painkillers and exercising. Majority of the nurses are also knowledgeable with the effectiveness of back care techniques which they also recommended that they should be utilized. These included: use of correct body mechanics, lifting together as a team, encouraging active patients to lift themselves, as well as using devices for lifting and transferring. The above findings were in line with the report by National Institute of Occupational Safety and Health (2007) whose findings revealed that a big number of nurses preferred self-management programs such as exercise, resting or taking a break off the work and complementary and alternative medicine such as aspirin rather than using interventional pain management techniques. This is because remedies such as exercise programs such as yoga, walking, and aerobic exercise resulted in both clinically and statistically significant improvements in outcomes for patients with chronic back pain and hence were believed to be useful for preventing low back pain. Various scholars such as Maul et al (2003) among others have also documented on a number of remedies for instance, over the counter prescription for instance, use of pain killers such as aspirin, ibuprofen, naproxen, and acetaminophen as also being significant and are often being used by nurses to combat the low back pain.

Conclusion

The study found that nurses had considerable knowledge of appropriate back care techniques. Most respondents recognized the importance of lifting patients as a team, using correct body mechanics, encouraging active patients to assist themselves, and using appropriate devices for lifting and transferring patients. However, despite this knowledge, implementation was limited by inadequate training programmes, staff shortages, insufficient lifting and transfer devices, and inadequate space for applying recommended back care techniques.

Recommendation

Kiruddu Regional Referral Hospital should establish regular in-service training programmes on back care, correct body mechanics, safe patient handling, and prevention of occupational low back pain. Training should not be limited to orientation of newly recruited nurses but should be conducted periodically. The hospital should also improve the availability of assistive devices and provide adequate space where nurses can undertake appropriate physical activities. Nurses should seek timely professional assessment of persistent back pain and avoid relying solely on self-medication.

Acknowledgement

I give glory to God for the strength that made me carry out this research. I would like to express my sincere gratitude to those people who contributed their time, energy, ideas, experience, and encouragement to help me complete this study.

I am very grateful to my supervisor, Mr. Nyakuni Peter, whose tremendous advice and intellectual inspiration have been valuable to me. His motivation, friendly treatment, encouragement, and regular engagements gave me impetus to complete this dissertation amidst challenging conditions.

I also thank the principal of the Health Tutors College, Ms. Keren Carol Drateru, and the deputy principal, Mr. Katumba Davis, for their guidance during my stay at the college.

I thank my entire family, particularly my wife, Keren Ssekyewa, for their sacrifice, tolerance, and encouragement

during my period of study, which was characterized by economic hardships for the entire family.
I do extend my appreciation to my course mates, especially the members of the Together as One discussion group, who encouraged me to work hard and provided constructive guidance in conducting this study. Thank you for being there for me.
I also thank all people who helped me get information, especially the management of Kiruddu Referral Hospital and the respondents who agreed to participate in this study. Thank you for making the study a success.

List of abbreviations

LBP - Low Back Pain
SPSS - Statistical Package for the Social Sciences
CVI - Content Validity Index
NBS - National Broadcasting Services
NIOSH - National Institute for Occupational Safety and Health
OTC - Over-the-counter
CME - Continuing Medical Education
VASP - Visual Analogue Scale for Pain
KCCA - Kampala Capital City Authority
CVI - Content Validity Index
IRB - Institutional Review Board
WHO - World Health Organization

Source of funding

The study received no external funding.

Conflict of interest

The authors declare no conflict of interest

Data availability

Data are available upon request from the author

Author contributions

JS: conceptualization, methodology, investigation, writing the original draft.
PN: data curation, validation, supervision.
KCD: validation, supervision.

Informed consent

Written informed consent was obtained from all participants prior to their inclusion in the study. Participants were informed about the purpose of the study, procedures involved, potential risks and benefits, and their right to withdraw at any time without penalty.

Author biography

Julius Ssekyewa: a student pursuing a bachelor's degree in medical education at Makerere University.
Peter Nyakuni: research supervisor at Health Tutors' College Mulago.
Keren Carol Drateru: research supervisor at Health Tutors' College Mulago.

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