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Determinants of utilisation of the clinical practice guideline in acute management of patients with acute traumatic spinal cord injury in Nsih, Kenya

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Abstract

Background: Spinal cord injuries have severe implications for public health all around the world. As a result, there is an urgent need to evaluate variables that influence the utilisation of the clinical practice guidelines for their acute care management.
Objective: The study's objective was to assess the determinants of the utilisation of the CPG in the acute management of patients with acute traumatic spinal cord injuries among healthcare workers at NSIH, Kenya.
Material and methods: An analytical cross-sectional design was employed in this study. A census sampling with a sample size of 40 was employed in the study. A semi-structured research questionnaire was used to collect the quantitative data. The chi-square test was used for bivariate analysis and binomial logistic regression was used for multivariate analysis. The cutoff for statistical significance was $p<0.05$.
Results: The level of utilisation of the clinical practice guideline was low(22.5%). The presence of trained healthcare workers was a determinant of the level of utilisation of the CPG while years of working experience and the presence of adequate healthcare providers among others were not associated with the level of utilisation of the CPG.
Conclusion: The study concluded that the level of utilisation was low (22.5%) and further concluded that training on CPG influenced its utilisation by the healthcare providers. There is a need for CPG training programmes, the development of guideline implementation tools, and feedback mechanisms for CPG performance assessment.

Keywords: Acute management, Acute traumatic spinal cord injury, Determinants, Level of utilization

Introduction

Acute traumatic spinal cord injury (ATSCI) is a traumatic event to the spinal cord that causes disruptions to the nervous system and can have devastating effects on an individual's physical, mental, and social wellbeing. Witiw and Fehlings[1] described the phases in the development of acute SCI as "primary" and "secondary". These phases are the initial traumatic injury to the spinal cord, microhaemorrhages in the white and grey matter, axonal damage, and disruption of cellular membranes.[2]

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Researchers and statisticians worldwide have made efforts to quantify the prevalence of ATSCI. According to Sekhon and Fehlings,[3] the incidence rate of acute SCI is estimated to be between 14 and 40 million people per year globally. In 2019, the Global Burden of Disease Study estimates the number of individuals affected by spinal cord injuries has increased to 13.2 million from 11.37

million in 1990. Sub-Saharan Africa currently lacks comprehensive epidemiological data on acute traumatic spinal cord injuries. In contrast, yearly occurrences of acute SCI in South Africa and Botswana were 75.6 and 13 million people, respectively, according to two prospective investigations.[4] However, 61% and 62% of all ATSCIs in South Africa are the result of violence.[5] Meanwhile, acute traumatic spinal cord injuries in Kenya are not tracked in a national database due to the absence of a national registry.

A Kenyatta National Hospital study by Kinyanjui et al[6] indicated that vehicular accidents were the most common cause of acute traumatic SCI (55%), followed by falls from a great height (37%), industrial accidents (8%), and animal attacks (8%). Acute traumatic spinal cord injuries are becoming more common, highlighting the urgent need to assess the factors that affect the use of clinical practice guidelines in acute care management. Despite the use of these guidelines, combined with professional judgement and patient selection, adherence to recommendations remains inconsistent at all levels of care worldwide.[7]

Despite the rising incidence of spinal cord injuries due to automobile collisions and falls from heights, no research has been conducted in Kenya on the use of CPG in the acute care of patients with ATSCI.[6] Timely management of patients with ATSCI, aiding inexperienced healthcare practitioners in making evidence-informed decisions, promoting standardisation of care across all hospitals, reducing rehabilitation time for ATSCI patients, lowering treatment costs, lowering rates of secondary complications after ATSCI, lowering rates of morbidity and mortality, and maximising the use of available resources are all reasons why clinical practice guidelines are so crucial.

Therefore, the objective of this study was to assess the extent to which the clinical practice guideline is used in the acute care management of patients with ATSCI and to identify the socio-demographic characteristics of healthcare providers, health system factors, and knowledge and attitude factors associated with such use.

Material and Methods

Study design: An analytical cross-sectional design was used in determining the socio-demographic factors, health-system factors, and knowledge and attitude factors influencing CPG utilisation. This method was adopted because of its ability to analyse and quantify the relationship between independent and dependent variables.

Study area: Because no other public institution provides specialised care for people with spinal cord injuries, the study was conducted at the National Spinal Injury Referral Hospital (NSIH). It is a level 6 hospital with 40 beds and 135 staff (8). It is located in Kilimani, Nairobi County, and it lies between the coordinates 1° 17' 17" to the south and 36° 47' 38" to the east. This hospital receives patients referred from private and public institutions in the whole of the republic and neighbouring counties as well.

Study population: Healthcare providers in NSIH were the study's target group (clinical officers and nurses). The particular group was specifically targeted because they are in charge of utilising the clinical practice guidelines in managing patients with acute traumatic spinal cord injuries.

Sample size determination: A complete enumeration of the population of the study, which was 40, was selected as the sample size.

Sampling technique: A census sample was employed.

Data collection tools and procedures: A semi-structured research questionnaire was used to collect the quantitative data. There were three sections to the tool. Section A collected information on socio-demographic factors; Section B collected information on health system factors; and Section C collected information on the level of utilisation of clinical practice guidelines and knowledge and attitude factors.

Statistical analysis: The Statistical Package for the Social Sciences (SPSS) version (27) was used in the quantitative analysis. After the respondent's data was entered into an Excel sheet and checked for outliers, inconsistencies, and gaps, the data was then imported into SPSS, and additional analysis was performed on it.

The mean and standard deviation were used to summarise the numerical data, while the categorical variables were summarised by frequencies and percentages. In the process of doing a bivariate analysis, cross-tabulations and the chi-square test of independence were used to investigate the degree to which the dependent and independent variables

were related at a 95% confidence interval. A p-value that is either less than or equal to 0.05 was used as the cut-off point for statistical significance. Binomial logistic regression at a 95% confidence interval was used to test for further association and to control for confounders for the variables that were shown to be statistically significant in bivariate analysis. The results were then presented in text, tables, and graphics. The level of utilisation of the CPG was presented using a pie chart, with its follow-up question presented using a frequency table. The socio-demographic factors, health system factors, and knowledge factors were presented with a frequency table, while attitude factors were presented with a frequency table and a mean and standard deviation table.

Ethical consideration: The researcher obtained ethical approval from the Mount Kenya University Institutional Ethics Review Committee (IERC) with reference number MKU/ISERC/3033. NACOSTI granted a permit to conduct the study in the National Spinal Injury Referral Hospital with license number NACOSTI/P/23/29346, and the appropriate counties each authorised the study. The participants voluntarily chose to participate, and the researcher got informed consent in writing. The anonymity and privacy of the participants were upheld. The goal, benefits, and potential hazards of the study were all explained to the participants. Each participant was given an identification number rather than their name to use in the questionnaire. The research was carried out in a private setting to preserve the respondents' privacy.

Results

Level of utilisation of the clinical practice guideline

This study sought to determine the level of utilisation of the clinical practice guideline in the acute care management of patients with acute traumatic spinal cord injury among 40 healthcare workers. As shown in Figure 1 below, only 9(22.5%) of participants responded to having utilised the clinical practice guideline in daily practice out of a sample of 40 participants who fully responded to the posed questions.

Influence of socio-demographic factors on the level of utilisation of the CPG

Socio-demographic variables were run on a chi-square test of independence to test any statistically significant relationships between the level of utilisation of the CPG and the independent variables as shown in Table 1. None of the socio-demographic variables were shown to have a statistically significant relationship with the dependent variable; respondents' age(X^2=2.027, df=2, p=0.355), gender(X^2=0.218, df=1, p=0.64), education level (X^2=0.571, df=3, p=0.463), Cadre of the healthcare workers(X^2 =0.942, df=1, p=0.332) and years of working experience(X^2=6.547, df=3, p=0.088).

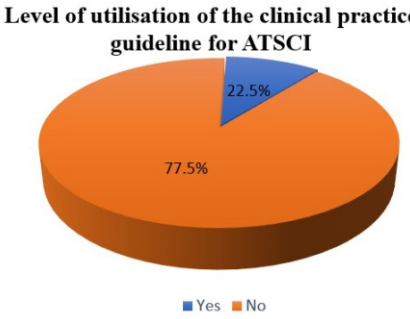

Figure 1: Level of utilisation of the clinical practice guideline for ATSCI

Table 1: Cross-tabulation on socio-demographic factors and level of utilisation of the clinical practice guideline

Independent variable	Categories	Dependent variable (level of utilisation of the clinical practice guideline)		Statistical significance
		Yes (N 9)	No (N 31)	
Age	0-29	0(0.0%)	6(100%)	X^2=2.027
	30-49	7(25.9%)	20(74.1%)	df 2
	50 and above	2(28.6%)	5(71.4%)	p=0.355
Gender	Male	1(33.3%)	2(66.7%)	X^2=0.218
	Female	8(21.6%)	29(78.4%)	df=1
				p=0.64
Education level	Diploma	4(16%)	21(84%)	X^2=0.571
	Higher diploma	1(50%)	1(50%)	df=3
	Bachelors	3(30%)	7(70%)	p 0.463
	Masters	1(50%)	1(50%)	
	Others	0(0.0%)	1(100%)	
Cadre	Clinical officer	0(0.0%)	3(100%)	X^2=0.942
	Nursing officer	9(24.3%)	28(75.7%)	df=1
				p=0.332
Years of working Experience	0-9	0(0.0%)	10(100%)	X^2=6.547
	10-19	5(27.8%)	13(72.2%)	df 3
	20-29	4(44.4%)	5(55.6%)	p=0.088
	30 and above	0(0.0%)	3(100%)	

Health system factors associated with the level of utilisation of the CPG

The relationship between health system factors and the degree of utilisation of the CPG was established through the chi-square test of independence (table 2), after which variables that were statistically significant were modeled into a binary logistic regression model (table 3). In the health system factors, the following variables were found to be

Table 2: Cross-tabulations on health system factors and level of utilisation of the clinical practice guideline

Independent variable	Categories	Dependent variable (level of utilisation of the clinical practice guideline) Yes (N 9)	No(N 31)	Statistical significance
Trained Healthcare Providers				X^2=10.223
Trained in the utilisation of the CPG	Yes	4(33.3%)	8(66.7%)	df=3
	No	5(17.9%)	23(82.1%)	p=0.017
Training programmes organised by NSIRH	Yes	0(0.0%)	0(0.0%)	
	No	9(22.5%)	31(77.5%)	
Expertise to carry out recommendations in the CPG	Yes	9(33.3%)	18(66.7%)	
	No	0(0.0%)	13(100%)	
Performance evaluated by superiors	Yes	6(35.3%)	11(64.7%)	
	No	3(13%)	20(87%)	
Guideline barriers				X^2=7.749
Have a copy	Yes	3(100%)	0(0.0%)	df=10
	No	6(16.2%)	31(83.8%)	p=0.653
Guideline beneficial to daily practice	Yes	7(33.3%)	14(66.7%)	
	No	2(10.5%)	17(89.5%)	
Recommendations in a clear and concise manner	Yes	8(34.8%)	15(65.2%)	
	No	1(9.1%)	10(90.9%)	
	I don't know	0(0.0%)	6(100%)	
Is the guideline up to date (at least 5yrs	Yes	0(0.0%)	0(0.0%)	
	No	9(31%)	20(69%)	
	I don't know	0(0.0%)	11(100%)	
Guideline is complex to use	Yes	0(0.0%)	7(100%)	
	No	9(31%)	20(69%)	
	I don't know	0(0.0%)	4(100%)	
Is guideline more specialist than generalist oriented	Yes	0(0.0%)	6(100%)	
	No	9(31%)	20(69%)	
	I don't know	0(0.0%)	5(100%)	
Volume of work interferes with usage of CPG	Yes	2(10.5%)	17(89.5%)	
	No	7(33.3%)	14(66.7%)	
Work shift interferes with usage of CPG	Yes	1(5.9%)	16(94.1%)	
	No	8(34.8%)	15(65.2%)	
Guideline provides basis of logical referral	Yes	9(34.6%)	17(65.4%)	
	No	0(0.0%)	11(100%)	
	I don't know	0(0.0%)	3(100%)	
Guideline offers standardisation of care	Yes	3(27.3%)	8(72.7%)	
	No	6(27.3%)	16(72.7%)	
	I don't know	0(0.0%)	7(100%)	
Lack of time to apply recommendations of the CPG	Yes	2(10%)	18(90%)	
	No	7(35%)	13(65%)	
Guideline is compatible with established practice in NSIH	Yes	8(30.8%)	18(69.2%)	
	No	1(11.1%)	8(88.9%)	
	I don't know	0(0.0%)	5(100%)	
Guideline restricts continuity of self-education	Yes	1(25%)	3(75%)	
	No	8(22.2%)	28(77.8%)	
Adequate healthcare providers				X^2 0.726
Shortage of staff	Yes	9(23.7%)	29(76.3%)	df= 2
	No	0(0.0%)	2(100%)	P 0.696
Lack of time to use CPG due to shortage of staff	Yes	3(33.3%)	6(66.7%)	
	No	6(20.7%)	23(79.3%)	
Availability of diagnostic equipment and facilities				NIL
Adequate disposable and non-disposable materials	Yes	9(22.5%)	31(77.5%)	
	No	0(0.0%)	0(0.0%)	
Functioning MRI	Yes	9(22.5%)	31(77.5%)	
	No	0(0.0%)	0(0.0%)	
Functioning ICU/HDU	Yes	0(0.0%)	0(0.0%)	
	No	9(22.5%)	31(77.5%)	
Functioning operating Theatre	Yes	9(22.5%)	31(77.5%)	
	No	0(100%)	0(0.0%)	

Table 3: Binary logistic regression model on health system factors

Variables in the Equation									
								95% C.I.for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	Trained healthcare providers	3.238	1.6525	3.972	1	.046	25.494	1.055	616.022
	Constant	-3.883	2.499	2.415	1	.120	.021		

Table 4: Cross-tabulation on knowledge factors with the level of utilisation of the clinical practice guideline

Independent variable	Categories	Dependent variable (level of utilisation of the clinical practice guideline) Yes(N 9)	No(N 31)	Statistical significance
Knowledge of the CPG				
Awareness of the CPG	Yes	9(26.5%)	25(73.5%)	X^2=6.968
	No	0(0.0%)	6(100%)	Df 6
Familiarity with the CPG	Yes	9(31%)	20(69%)	P 0.324
	No	0(0.0%)	11(100%)	
Easy access to the CPG at the point of care	Yes	9(32.1%)	19(67.9%)	
	No	0(0.0%)	12(100%)	
Clearly read and understand the CPG	Yes	9(30%)	21(70%)	
	No	0(0.0%)	10(100%)	
Role and Responsibility	Yes	9(36%)	16(64%)	
	No	0(0.0%)	15(100%)	
Adherence to the CPG Recommendations	Yes	9(29%)	22(71%)	
	No	0(0.0%)	9(100%)	
CPG based on scientific evidence	Yes	9(31%)	20(69%)	
	No	0(0.0%)	7(100%)	
	I don't know	0(0.0%)	4(100%)	

Table 5: Chi-Square (X) Test of independence between Attitude factors and the level of utilisation of the CPG

	Dependent variable (Level of utilisation of the clinical practice guideline)		
	X^2	Df	P-value
Independent variable (Attitude Factor)	14.057	14	0.445

statistically significantly associated with the level of utilisation of the CPG: trained healthcare providers(X^2=10.223, df=3, p=0.017), while guideline barriers (X^2=7.749, df=10, p=0.653), adequate healthcare providers(X^2=0.726, df=2, p=0.696) revealed a non-statistically significant relationship with the level of utilisation of the CPG. In addition, healthcare workers who are trained were up to 25.50 times more likely to utilise the CPG in their daily clinical practice than those who were not (OR=25.494, 95% C.I: 1.055-616.022).

Knowledge and attitude associated with the level of utilisation of the CPG

As illustrated in Table 4, the results of the chi-squared test showed a non-statistically significant relationship between knowledge of the CPG and its level of utilisation (X^2=6.968, df=6, p=0.324).In addition, as indicated in Table 5, the chi-square statistic results with values (X^2 =14.057, df =14, p=0.445) indicated a non-statistically significant relationship between attitude and level of utilisation of the CPG.

Discussion

The level of utilisation of the CPG was low, which was in line with the study conducted by Braithwaite et al.[9] which suggests figures ≥60% as the cutoff for

high utilisation and <60% as low utilisation. This finding was consistent with the study conducted in Ghana which revealed that 25.3% of healthcare workers utilised the CPG.[10] However, contrary to these findings, a study carried out in Qatar showed a high level of utilisation of the clinical practice guidelines by healthcare practitioners with 80%.[11]

Concerning socio-demographic factors associated with the level of utilisation of the CPG, age was not associated with the level of utilisation of the CPG. These findings were consistent with a study done in Cyprus which found no relationship between age and level of utilisation of the CPG (p=0.393).[12] On the contrary, a previously conducted study done in Ethiopia showed a statistically significant relationship between the 2 variables (AOR=5.98, 95% C.I: 1.34-26.7).[13] This variation could be because the recent study focused more on nurses, contrary to this study.

Gender was not associated with the level of utilisation of the CPG. This result corroborated the study conducted in Saudi Arabia which showed no statistical association between gender and utilisation of the CPG.[14] However, this contrasted the studies done in Bahrain and Cyprus respectively which revealed a statistical association between the two variables.[12,15] An explanation for this could be the vast gender imbalance in this study and the present study.

The level of education was not associated with the level of utilisation of the CPG. This finding agrees with the findings of studies carried out in Saudi Arabia and Ghana respectively which showed no statistically significant relationship between education level and utilisation of the CPG.[14,10] However, this contrasted with findings from the study conducted in Ethiopia which showed a statistically significant association between the two variables.[16] This result finding could be explained by the majority of the respondents being nurses who, according to prior research, depend on their superior's or colleagues' experience and training programmes regardless of education level. There was a non-statistically significant association between cadre and level of utilisation of the CPG. This result implies that the level of utilisation of the CPG was influenced by other factors other than cadre. This compares with the studies conducted in Ghana which showed no statistically significant association between the two variables.[10] However, this contrasted a study done by Weng et al.[17] in Taiwan which showed a statistically significant association between cadre and level of utilisation of the CPG (p<0.001). An explanation for these findings could be due to the variations in the processes instituted in implementation and utilisation of the CPG in different countries for different cadres of healthcare workers.

There was a non-statistically significant relationship between the years of experience and the level of utilisation of the CPG. This corroborates the findings of a study carried out in Ghana which showed a non-statistically significant relationship between years of working experience and level of CPG utilization.[10] However, this contrasted with the findings of a study conducted in Nigeria which showed a statistically significant association between the two variables.[19] An explanation for these findings could be that healthcare workers with more years of working experience tend to rely on their expertise and the hospital norms while those with fewer years of experience mostly rely on their superiors as a source of advice.

Concerning Health system factors influencing the level of utilisation of the CPG, there was a non-statistically significant relationship between the guideline barriers and the level of utilisation of the CPG. This finding corroborated with a study done in Bahrain which found no statistically significant association between the guideline barriers and its level of utilization.[15] However, this contrasted with the study done in Ethiopia which showed a statistically significant association between the guideline barriers and its level of utilization.[13] An explanation for these variations could be due to the type of guideline used in these different settings and also the protocols that may have been put in place to mitigate these barriers to enable the healthcare workers' continuous provision of evidence-based care.

There was a non-statistically significant relationship between adequate healthcare providers and the level of utilisation of the CPG. This finding was comparable with the study carried out in Bahrain which showed no statistically significant association between the two variables (p>0.05).[15] However, this finding disagrees with the study carried out in Egypt which showed a statistically

significant association between adequate healthcare providers and the level of utilisation of the CPG.[18] These result variations could be explained due to the number of employees available and the type of health facility in these two studies. Healthcare workers who are trained were up to 25.50 times more likely to utilise the CPG in their daily clinical practice than those who were not. These findings corroborated with a study done in Ethiopia which found a statistically significant statistical association between CPG-trained healthcare providers and their level of utilization.[16]

In terms of the association between Knowledge and Attitude factors and the level of utilisation of the CPG, there was a non-statistically significant relationship between knowledge of the CPG and its level of utilisation. This corroborates the study carried out in Egypt respectively which showed a non-statistically significant relationship between knowledge of the CPG and its utilization.18 However, this contrasted with the study carried out in Nigeria which found a statistically significant association between the two variables.[19] An explanation for these variations could be due to healthcare workers relying more on their experience, the presence of an already established hospital practice norm, and the type of guideline in place in these areas of study.

There was a non-significant statistical relationship between attitude and level of utilisation of the CPG. This finding corroborated the study carried out in Switzerland respectively which showed no statistically significant association between the two variables.[20] However, this contrasted with the study conducted in Turkey which found a statistically significant relationship between attitude and CPG utilization.[21] An explanation for the disparities in the above-reported findings could be the variations in the training of the healthcare workers regarding CPG use which informed their attitude towards it.

Conclusion

The level of utilisation of the CPG was low. The following variables were not associated with the level of utilisation of the CPG: gender of the study respondent, education level, respondent age, Cadre of the healthcare workers, years of working experience, presence of adequate healthcare providers, presence of guidelines barrier, knowledge and attitude factors. While the presence of healthcare workers who were trained were up to 25.50 times more likely to utilise the CPG in their daily clinical practice than those who were not.

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