

KNOWLEDGE OF NURSES' AND PATIENTS' ON BURST ABDOMEN IN SURGICAL WARDS IN WESTERN PROVINCIAL GENERAL HOSPITAL

Roselyne Asiko Abwalaba¹, Mable Khakasa Wanyonyi²

¹Department of Clinical Nursing and Health Informatics, Masinde Muliro University of Science and Technology.

²Department of Reproductive Health, Midwifery and Child Health Nursing, Masinde Muliro University of science and technology.

Corresponding author: *Roselyne Asiko Abwalaba* (rabwalaba@mmust.ac.ke)

Abstract

Introduction. Burst abdomen is the partial or complete disruption of abdominal wound closure with protrusion or evisceration of the abdominal contents. It is a major cause of death of patients who have undergone operation in surgical wards. 20000 deaths in the United States of America every year are due to burst abdomen. In the Sub-Saharan Africa, including Kenya, 40% of the patients done laparotomy develop burst abdomen *Objective.* This study aimed at determining the knowledge of burst abdomen among nurses and patients in surgical wards in western provincial general hospital. *Design.* The study used a cross sectional analytical study design. *Setting.* The study was carried out in western provincial general hospital, which is a major referral hospital in western region. *Sample size.* Simple random sampling was applied to get participants ($n = 200$) *Analysis.* Data was analyzed through descriptive statistics, chi-square test of independence, logistic regression while thematic analysis was employed on qualitative data. *Main outcome measures.* Knowledge of burst abdomen *Results.* Most of the respondents (83%) were in the age category of over 31 years respectively. Majority (92%) were married or living with a partner. The following variables were statistically significant in this study; having attained secondary level of education and above (OR 0.6, 95% CI 0.4-0.98, $p = 0.01$), those who belonged to the protestant's religion (OR: 1.6; 95% CI: 1.1 – 2.2; $p=0.01$) *Conclusion.* Cross infection was the major cause of burst abdomen in surgical wards. Having attained at least secondary level of education is a client characteristic that is critical in the knowledge of burst abdomen. *Recommendation.* Hospital administration should provide enough supplies and equipment to all surgical wards to reduce cross infection which causes burst abdomen. The hospital administration in collaboration with surgical wards staff should reinforce the importance of washing hands before and after handling each patient and after and before every procedure, and ensure that water supply is constantly available.

Keywords

Burst abdomen, western provincial general hospital, knowledge, patients.

INTRODUCTION

Burst abdomen is the partial or complete disruption of abdominal wound closure with protrusion or evisceration of the abdominal contents. It occurs as a result of treatment in the hospital and hospital setting after an abdominal operation, but secondary to the patients' original condition (Seymour, 1999). According to Atherton (2003), the hospital environment and medical personnel are the contributing factors to burst abdomen in Africa. 10 percent of America hospitalized patients (about one million) get burst abdomen yearly. It is a major cause of death of patients in surgical wards. 20000 deaths in the United States of America every year are due to burst abdomen. In the Sub-Saharan Africa, including Kenya, 40% of the patients done laparotomy develop burst abdomen (Abedon,2006). In Western Provincial General Hospital, 30% of the patients done laparotomy develop burst abdomen (statistics office reports, western region, 2007). The incidence of burst abdomen is as a result of health care workers not practicing hand washing before and after contact with every patient. Rates of hand washing by health workers is lower than the required standards. This transfers micro-organisms from one patient to another by cross infection. The wound then gets infected and hence poor process of wound healing (Zimring *et al.*,2004)

According to Atherton (2003), burst abdomen is caused by contaminated instruments and hospital materials. He says 10-20% of hospital material and instruments are contaminated with microbial infections and micro-organisms. This is due to poor decontamination and sterilization procedures practiced by medical personnel. This spreads micro-organisms from the instruments to the skin during skin operation and wound cleaning and dressing. This lowers the process of wound healing. Unsafe medical care and practice is an important factor in transmitting infections to patients thus lead to burst abdomen. Failure of the medical personnel to practice aseptic technique during wound cleaning and dressing introduces micro-organisms to the wound. This lowers the process of wound healing and the wound bursts due to infections (Gisselquist *et al.*,2002). The WHO study (2002) indicates that, low immunity in patients after laparotomy causes burst abdomen. It states that the highest prevalence of burst abdomen occurs among patients with increased susceptibility because of disease such as HIV/AIDS and other opportunistic infections such as tuberculosis, pneumonia. In addition, the centers for disease control and prevention has found that the patients with greater risk of burst abdomen have a chronic illness such as diabetes and cancer. This is due to normal impairment of normal immune defenses because of the therapy being given, for example radiation and steroids (Lawrence,2003)

However, failure of the patients to be covered on antibiotics before and after operation is a cause of burst abdomen. This lowers the process of wound healing as the multiplication of micro-organisms occurs hence no treatment is administered. The use of antibiotics which eliminate the patient's normal flora providing opportunity for colonization with pathogenic and drug resistant organisms cause burst abdomen. The use of therapeutic procedures and devices, which bypass patients normal defense barriers provide a portal entry into the body hence cause burst abdomen. This is due to the infections caused by the wounds (Phipps *et al*, 2003). Poor nutrition is a cause of burst abdomen in patients done laparotomy. It commonly occurs in malnourished patients as compared to healthy patients. This is because the body as a lower defense mechanism in malnourished patients. This lowers the process of wound healing hence burst abdomen after laparotomy (Abedon,2006). Failure of the patients to be maintained clean before and after operation cause burst abdomen. This lowers process of wound healing as the micro-organisms get good environment for their multiplication and spread to the wound. Personal and environmental hygiene are very important factors factors in cross infection of micro-organisms to the wound (Lawrence,2003).

Burst abdomen is prevented by ensuring medical staff wash hands before and after contact with every patient. This reduces the spread of micro-organisms from one patient to another. This helps promote good wound healing process thus no burst abdomen cases occur (Zimring *et al*, 2004). Atherton (2003), in his study regarding hand washing, shows that there is very little evidence regarding the introduction of educational programmes on hand washing to reduce cross infection. However, he says there is limited evidence for the benefit of increasing sinks in surgical wards for hand washing. Burst abdomen is prevented by proper aseptic technique practice by the medical personnel. This is during skin operation and wound cleaning and dressing. This prevents the introduction of micro-organisms to the wound, thus no infections. The wound heals well and faster (Gisselquist *et al*, 2002). According to Abedon (2003), burst abdomen is prevented by proper decontamination and sterilizing of instruments. This prevents the spread of micro-organisms from the instruments to the wounds during operation and wound cleaning. This promotes wound healing due to no wound infections occurring. Good nutrition in patients before and after operations prevents burst abdomen. This ensures that the body has a high defense mechanism hence the wound heals well and faster. Malnourished patients are the most susceptible to burst abdomen after laparotomy. This is because of the lowered body defense mechanism. In healthy and well-nourished patients, wound healing process is faster and with no complications (Lawrence, 2003).

The study sought to fill exiting knowledge gaps in the study area. Past studies on burst abdomen uptake were done in different geographical regions and differently (Atherton, 2003), Therefore, the researcher found it necessary to conduct this study. The broad objective was to study burst abdomen in surgical wards in provincial general hospital. The findings will be utilized for planning and implementation of programs to reduce burst abdomen among patients in the County.

MATERIALS AND METHODS

Research Design

The study designs adopted for this study was cross-sectional analytical and evaluation because they employ quantitative approaches, where self-administered questionnaires were used for data collection. Analytical study design was ideal as the study was carried out in a limited geographical scope and hence it was logistically easier and simpler to conduct considering the limitations of this study (Mugenda & Mugenda, 2008). Therefore, the analytical survey was deemed the best strategy to fulfill the objectives of this study.

Study setting

The study was conducted in western provincial general hospital, located in western Kenya. It has 132 government run health facilities ranging from a County Referral hospital to a dispensary distributed in six districts: Kakamega North (Malava), Kakamega Central (Lurambi), Kakamega South (Ikolomani), Kakamega East (Shinyalu) and Butere/Mumias. Numerous private and faith-based facilities also provide health care services to the population in this County. The western provincial hospital was purposively selected because these facilities have higher service availability and readiness assessment index (Government of Kenya [GoK], 2014).

Participants

For the research, the target population was patients and medical care givers of surgical wards in western provincial general hospital. On average, surgical wards have 200 patients at any given time.

This gives a total of two hundred (200) of the total target population. The sample size was determined using Cochran equation (1963):

$$n = \frac{z^2 p q}{d^2}$$

Where:

n = the desired sample size (when the target population is greater than 10,000)

z = standard normal deviation set at 1.96 which corresponds to 95% confidence interval

p = proportion of the target population estimated to have a characteristic that is being measured (at 50%) to maximize sample size.

q = 1 – p (1 – 0.5) = 0.5

d = degree of accuracy desired set at 0.05

Questionnaire

Questionnaires were selected as data collection instruments. The instrument comprised of the following sections: In section one, the information that was collected was the demographic characteristics and included age, gender, marital status, education level and religion. In section two, nine questions sought to determine burst abdomen. The questions were ranked on a 2-point likert scale with the anchors being disagree=0 to agree=1. To increase the validity and reliability of the instruments, the questionnaire was evaluated by experts. Then based on the feedback the final questionnaire was prepared for pre-test. The pretest study was conducted in one sub-county hospital. The reliability of the scale of the 9 items was found to be: Internal consistency = (Cronbach's $\alpha = 0.79$). Deleting selected items would not increase the alpha.

Data Analysis

Data analysis was done using the statistical program for social sciences (SPSS) version 25. Inferential and descriptive statistics were used to analyze data. Descriptive analysis of data was done using the mean, frequencies and percentages. In this study association between the study variables was assessed by a two-tailed probability value of $p < 0.05$ for significance. Visual inspection of the data illustrated that missing data appeared to be missing at random. The researcher conducted analysis of normality, for the outcome variable, prior to hypothesis testing by examining and kurtosis and skewness of the data. In order to test and identify possible outliers in the data, graphical assessment visuals, including scatter and box plots were used. Each question was coded and entered in SPSS. The findings were entered in the variable view of the statistical package for social sciences (SPSS) version 25.0 screen, each questionnaire at a time, starting with first to last questionnaire. Univariate analysis was used to describe the distribution of each of the variables in the study objective, appropriate descriptive analysis was used to generate frequency distributions, tables and other illustrations used to analyze knowledge. Bivariate and multivariate analysis was used to investigate the strength of the association and check differences between the outcome variable and other independent variables (Munika *et al.*, 2018).

Data Collection Procedures

Data from the participants was collected within a period of three weeks, using a structured questionnaire. For this research to be of quality, integrity and transparent, the researcher ensured that it was designed, reviewed and undertaken. Participants were informed fully of their roles, purpose of the study, risks involved if any and how they were to benefit from the study. To meet the above criteria, participation was voluntary free of coercion. The researcher ensured confidentiality of the information and anonymity of the respondents respected.

RESULTS

In this study, 200 patients participated. According to Mugenda and Mugenda (2003) a response rate of 50 percent is adequate, a response rate of 60 percent is good, and a response rate of 70 percent is very good. Therefore, the 100 percent response rate reported for this study formed an acceptable basis for drawing conclusions. Table 1 shows socio-demographic characteristics of the respondents who were interviewed. Most of the respondents (83%) were in the age category of over 31 years respectively. Majority (92%) were married or living with a partner. More than two-thirds (70.5%) had attained primary education compared with 25% who had completed secondary education.

Table 1.

Background characteristics of respondents

Variable	Categories	n	%
	<30	34	17
	≥31	166	83
Marital status	Single	8	4
	Married	184	92
	Divorced	4	2
	Widow	4	2
Level of education	None	2	1.0
	Primary	141	70.5
	Secondary	50	25.0
	Tertiary	7	3.4
Occupation	Housewife	57	28.6
	Farmer	110	55.0
	Employed	5	2.7
	Self-employed/Business	21	10.4
	Student	6	3.2
Religion	Catholic	46	22.8
	Protestant	126	63.2
	Muslim	27	13.5
	Atheist	1	0.5

Knowledge on causes of burst abdomen

Table 2 shows items on knowledge on causes of burst abdomen. More than one-quarter of the respondents (27.4%) said sharing hospital beds caused burst abdomen. 88.8% of the participants said wound dressing equipment could cause burst abdomen. All respondents affirmed that Lotions and solutions used can cause burst abdomen. Similarly, all of them agreed overcrowding could cause burst abdomen. Indeed, all respondents said that health care providers not washing their hands could contribute to burst abdomen due to cross infection. Generally, many respondents had good knowledge on causes of burst abdomen.

Table 2 Knowledge on causes of burst abdomen

Variables	Categories	n	%
Sharing hospital beds causes burst abdomen	Yes	54	27.4
	No	146	72.6
Wound dressing equipment can cause abdomen	Yes	178	88.8
	No	22	11.2
Lotions and solutions used can cause burst abdomen	Yes	200	100.0
	No	0	0.0
Overcrowding can cause burst abdomen	Yes	200	100.0
	No	0	0.0
Health professionals not washing hands can contribute to burst abdomen	Yes	200	100.0
	No	0	0.0
Practice of aseptic techniques and antibiotics can control burst abdomen	Yes	200	100.0
	No	0	0.0

Bivariate analysis on patients' factors that are associated with knowledge of burst abdomen shows that there was a borderline significant relationship between level of education and knowledge in the study area (OR: 0.7; 95% CI: 0.5 – 1.0; p=0.06) as shown in Table 2 Knowledge was lowest among patients who had attained at least secondary school education compared with those who had primary or no education. Patients who were protestants were one-and a half more likely to be knowledgeable than those who belonged to the religions such as Catholics and Muslims, among others (OR: 1.6; 95% CI: 1.1 – 2.2; p=0.01).

Respondents answered a total of six closed ended questions. Each response was given a mark based on the level on the dichotomous response of yes=1 or no=0 and vice versa for questions that were reverse coded. Scale scores were computed by adding responses to the six questions resulting in a minimum possible score of 0 and a maximum of 6. The score varied from 0 - 6 points and was classified into 2 levels according to the Blooms' (1956) cut off point as follows: Adequate Knowledge (above 60%) and Inadequate Knowledge (below 60%). From the results, majority of the patients had adequate knowledge of burst abdomen 162 (81%), while only 38(19%) were categorized as having inadequate knowledge of burst abdomen.

Table 3 Patients characteristics associated with knowledge of burst abdomen

Risk factor	N	Knowledge of burst abdomen		Overall OR	95% CI	p value
		Knowle dgeable	Not Knowledg eable			
Age group:						
<30 years	34	55.3	44.7	1.1	0.7 – 1.5	0.7
>= 31 years	166	53.8	46.2			
Marital status:						
Married	184	54.7	45.3	1.3	0.7 – 2.3	0.4
Not married	16	47.9	52.1			
Level of education:						
At least secondary school	143	47.9	52.1	0.7	0.5 – 1.0	0.06
Primary school or none	57	56.6	43.4			
Occupation:						
Housewife	57	50.6	49.4	0.8	0.6 – 1.2	0.2
Employed	143	55.6	44.4			
Religion:						
Protestants	126	58.2	41.8	1.6	1.1 – 2.2	0.01
Others	74	47.2	52.8			

DISCUSSION

This was a descriptive study carried out in surgical wards, in western provincial hospital. Data collection was done on patients in surgical wards. A total of 200 questionnaires were distributed to respondents randomly. Many patients who were admitted in surgical wards were above 45 years as represented by 83% of the respondents. This indicates that this condition is common in elderly people due to aging mechanism of the body and poor nutrition which causes malnutrition hence poor wound healing process. Many patients in surgical wards were enlightened about burst abdomen as represented by 75% and knew its causes. According to Lynch et al (2003) and Dr. Atherton (2003), the rate of burst abdomen in the Sub-Saharan Africa where Kenya also falls is 40%. For the records in western region, the rate of burst abdomen was 40-46% which was due to several causes like cross infection, poor hygiene, sharing of beds, unsterile equipment and low immunity of patients. Many patients felt that health workers should practice hand washing before and after examining each patient. This was also supported by Dr. Atherton (2003) who stated that, the incidence of burst abdomen had gone high by over 40% because of failure of medical staff to wash hands before and after handling each patient.

Many patients also felt that the hospital should provide enough supplies and equipment to the surgical wards to ensure that standard health care services are provided to patients. This will enable the health workers to practice aseptic technique during wound dressing and operation hence reduce spread of micro-organisms to the patient's wounds. This will reduce cases of sharing of instruments

during procedures on more than one patient hence reduce cross infection thus good wound healing process. The same views are shared by Graig Zimring *et al* (2004) who recommended that each instrument should only be used on one patient during surgical procedures to prevent cross infection. This is because the hospital does not provide adequate equipment's and gloves to the wards as represented by 62% of the respondents. Many patients agree that health workers should decontaminate the instruments after use. This is a major cause of transmission of infections from instruments to the wounds-during surgical procedures, Phipps's *et al* (2003) supports this by saying that failure to decontaminate instruments is a major cause of cross infection of micro-organisms from instruments to the wounds. There is need for all the health workers to practice decontamination of instruments to reduce spread of infections. This will reduce cases of burst abdomen due to infections. Sterilization of instruments should also be standardized.

Burst abdomen cases made most of the patients not to like the services provided in the wards as represented by 60% of the respondents. This was because of the long stay after the burst abdomen hence expensive for them. According to the health workers, 75% of the respondents have managed patients with burst abdomen. This shows that it is a common condition which needs to be reviewed and steps taken to reduce its occurrence.

CONCLUSION

The bigger percentage of patients admitted in western provincial general hospital, in surgical wards had knowledge on burst abdomen and knew the causes of burst abdomen. Many patients had a negative attitude towards the poor practice of hand washing by medical staff. This is because it increased the spread of infections from one patient to another hence increasing the prevalence of burst abdomen. The hospital management practice of not providing enough supplies and materials, rationing of water supply to the wards were unsafe practices which increased spread of infections from patients to patients, hence leading to poor wound healing process. Poor sterilization of instruments and failure to practice aseptic technique during surgical procedures caused burst abdomen due to poor wound healing process. All of the above were the dominant causes of burst abdomen identified in the study by cross infection. Medical staff practices in surgical wards were unsafe hence caused increase in spread of infections from one patient to another. This therefore supported the hypothesis which stated "cross infection is the major cause of burst abdomen in surgical wards, in western Provincial General Hospital.

RECOMMENDATIONS

- The researcher recommended that the hospital administration should provide enough supplies and equipment to all surgical wards to reduce cross infection which increased the occurrence of burst abdomen.
- The hospital administration in collaboration with surgical wards staff to reinforce the importance of washing hands before and after handling each patient and ensure that water supply is constantly available.
- The medical staff in surgical wards to be trained on infection prevention control practices to reduce spread of micro-organisms and infections from one patient to another, and practice aseptic technique during wound cleaning and dressing.
- The Ministry of Health in collaboration with hospital administration should ensure enough supply of drugs to surgical wards, so that all patients are covered on prophylaxis antibiotics after operation.

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