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Research Article

Patients' Opinions on the Determinants of Postoperative Wound Healing in a Tertiary Health Facility in South-South, Nigeria

Ojong I.N.[1], Nsemo A.D.[1] and Bassey J.[2]

[1]*Department of Nursing Science. University of Calabar, Cross River State, Nigeria*

[2]*University of Calabar Teaching Hospital, Calabar, Cross River State, Nigeria*

ABSTRACT

Preoperative preparation of the patient which focuses on the improvement of health status, intraoperative asepsis and other advancements in technology have been shown to facilitate the outcome of surgical interventions and speed up postoperative wound healing. This study examines patients' opinion on determinants of postoperative wound healing in a tertiary health facility in Calabar. A descriptive survey design was adopted for the study. A validated structured four sections interview guide with a reliability coefficient of 0.79 was used to obtain information from 322 patients who were purposively selected and voluntarily participated from the 6 surgical wards in the hospital. Data was analysed using simple percentages and hypotheses were tested using chi-square analysis and independent t-test with the aid of the statistical package for social science version 21. Results showed that 189 (58.7%) respondents had positive opinion on co-morbidity factors associated with wound healing, while 133 (41.3%) respondents had a negative opinion. On local factors, 197 (61.2%) had a positive opinion, while 125 (38.8%) respondents had a negative opinion. On the influence of systemic factors, 189 (58.7%) respondents had positive opinion while 133 (41.3%) respondents had negative opinion. There was a positive significant association ($P<0.05$) between level of education and patients' opinion on co-morbidities factors associated with wound healing. There was no significant difference ($P>0.05$) between gender and systemic factors influencing postoperative wound healing. Based on these findings, it was recommended that Nurses should carry out health talks in clinics on wound hygiene and positive lifestyles for health promotion.

Keywords: *Patient, Opinion, Determinants, postoperative, wound healing*

*Author for correspondence: Email: *idangojong@yahoo.com*; *Tel: +234 8059807591*

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INTRODUCTION

Surgical interventions are one of the most frequent life-saving interventions used in medical practice. Yao, Bae & Yew (2013), documented that 30-50% of patients are being admitted for surgical procedures. These include; investigative or corrective, major or minor, open or minimal access surgery, elective or emergency and incision or excision. Whatever the procedure, they all require a break in the continuity of the skin, it is then important to ensure the complete and timely healing of this wound as this can lead to devastating consequences and measurable mortality.

Non-healing of surgical wounds is responsible for prolonged hospitalization, increased economic burden, morbidity and mortality. Tremendous advancement has been made in understanding the processes of surgical wound healing, the cell types and the order in which they appear in the wound have been established; many growth factors and their functions have been elucidated (Allen, 2016). Despite the advances in understanding the science of wound healing, pre-operative patients' preparation, operating room practices, instrument sterilization methods, better surgical techniques and the best efforts of infection prevention strategies, there is an increasing incidence of postoperative wound breakdown especially in Nigeria with limited resources to meet other health needs (Adigun et al, 2010). Yao et al (2013) observed that a previous history of peripheral vascular disease, connective tissue disease and diabetes were risks factors for wound dehiscence. Also, Ahmed, Mooar and Miyamoto (2011) compared hypertensive and normotensive patients undergoing surgery in terms of length of time of wound healing and reported that hypertension was associated with delayed wound healing following total hip replacement surgery. Osakwe et al (2014) studied the role of premorbid status and wound-related factors on surgical site infections in a tertiary hospital in sub-Saharan Africa and reported that more than half of the patients who developed site infection had some form of premorbid illness and the patients that had other co-morbid status of sickle cell disease, cancer, anaemia etc. have the highest rate of wound complications following surgery.

There is a growing interest concerning the occurrence and effects of malnutrition in hospitalized patients (Hess, 2011). The nutritional status of surgical patients are important in their preoperative management and postoperative recovery. Thus, pre-operative nutritional conditions influence a patients' physical recovery, local wound healing and surgical infection rates (Dickhaut et al, 2014). Myung-Sang-Soo and Hanlim (2014) also studied the preoperative nutritional status of the surgical patients in an Iranian hospital and reported that approximately 50% of the patients in their study cohort with delayed wound healing showed poor nutrition. In another study which assessed the nutritional status and caloric intakes of two groups of postoperative patients,

Elbanna et al (2016) re[ported that there was a significant relationship between nutritional status and postoperative wound healing as 55.4% of the experimental had good wound healing compared to 16% of the control group. In Nigeria, Akpan et al (2012) assessed the role of nutritional status in the postoperative outcome of surgical patient and reported that out of 19 (29.7%) of patients who were malnourished preoperative and with a Body Mass Index of <20kg and haemoglobin concentration of 10.13-1.5g.d1, 14 developed surgical wound infection with a mean length of hospital stay of 6-10 days.

Furthermore, more extensive studies have been carried out on surgical site infection as the major determinant of wound healing with little or no focus on other areas. Therefore, this study puts its focus on patients' opinion on the determinants of postoperative wound healing in tertiary health facility in Calabar. The major objective of this study is to highlight patients' opinion on the determinants of postoperative wound healing in tertiary health facility in Calabar. To achieve this objective, we sought to assess the opinion of the patients on the influence of co-morbidities on postoperative wound healing among patients in a tertiary health facility in Calabar. The role of local factors such as infection and nutritional status on postoperative wound healing among patients in a tertiary health facility in Calabar was also assessed. Lastly, the role of systemic factors such as age and obesity on postoperative wound healing among patients was examined.

MATERIALS AND METHODS

Research design: The design adopted for this study was institution based quantitative cross-sectional descriptive research design

Research setting : The study was conducted in the surgical wards in Tertiary hospital in South-South Nigeria. This area was chosen for the study because despite the fact that it is a tertiary health institution and a reference hospital, there is still a significant incidence of postoperative wound breakdown.

Target population : The target population for this study was all in-patients who had undergone surgery in those six wards between October 2019 - December 2019. From the records of the hospital management, a total of one thousand six hundred and forty (1640) patients made up the target population.

Accessible population: A total of three hundred and twenty-two (322) patients made up the accessible population. This population are those who had undergone surgery between six weeks of data collection.

Sample and sampling technique: Purposive Sampling technique was used to ensure that all the 322 patients in the accessible population were part of the sample size. However, participation was voluntary.

Data collection: The instrument used for data collection was a structured interview guide. A test-retest method was used to determine the reliability of instrument. After two weeks, similar copies were given to the same population and both subjected to statistical analysis using Pearson product Moment of Correlation Coefficient. A reliability coefficient of 0.79 was achieved.

Ethical consideration: The ethical approval was granted from the ethical committee of the institution. However, a verbal consent was also obtained from the ward managers and the participants. Furthermore, the confidentiality and privacy of the participants was maintained and no one was victimized.

Data analysis: Data were presented in tables; chi square and independent test analysis were used to determine the association and differences between variables with the alpha set at a 0.05 level of significance. Analysis were done with the aid of statistical package for social science (SPSS) version 21

RESULTS

The result from Table 1, above shows that out of the 322 respondents, males were 93 (29%) while females were 229 (71%) forty (12.4%) respondents were less than 20 years, 72 (22.4%) were between 21-30 years, 120 (37.3%) were between 31-40 years while 90 (28%) were 41 years and above. On marital status, 60 (18.6%) respondents were single, 182 (56.6%) were married, 51 (15.8%) respondents were divorced/separated and widowed were 29 (9%). Fifty (15.5%) respondents had no formal education, 65 (20.2%) had primary education, 117 (36.3%) had secondary education while 90 (28%) respondents had tertiary education

Respondents' opinion on co-morbidities factors Table 1b summarises the opinion of respondents on comorbidity f actors affecting wound healing. Results show that 189 (58.7%) respondents had positive opinion and 133 (41.3%) respondents had negative opinion on co-morbidities factors influencing wound healing

Table 2a shows that 205 (63.7%) of the respondents agree that the body needs oxygen, nutrients and energy in order to real wound properly while 117 (36.3%) disagreed. One hundred and ninety (59%) respondents agreed that increased blood sugar decreased the functions of tissue and slows healing of postoperative wound while 132 (41%) did not. On increased blood pressure delaying wound healing 150 (46.6%) respondents agreed and 172 (53.4%) disagreed. Two hundred and ten (65.3%) respondents agreed that Immune suppressive virus like HIV/AIDs cause immune cell to function inefficiently while 112 (34.7%) respondents disagreed.

Table 1
Socio-demographic characteristics of the respondents.

		Frequency	Percentage %
Sex	Male	93	29
	Female	229	71
	Total	**322**	**100**
Age	Less than 20 years	40	12.4
	21-30	72	22.4
	31-40	120	37.3
	41 years and above	90	28
	Total	**322**	**100**
Marital status	Single	60	18.6
	Married	182	56.6
	Divorced/Separated	51	15.8
	Widowed	29	9
	Total	**322**	**100**
Educational qualification	No formal education	50	15.5
	Primary education	65	20.2
	Secondary education	117	36.3
	Tertiary education	90	28
	Total	**322**	**100**

Table 2a:
Respondents' opinion on the co-morbidities factors influencing postoperative wound healing in a tertiary health facility in calabar (n=322)

Statement	Yes	No	No Idea
The body needs oxygen, nutrients and energy in order to heal wound properly	205 (63.7%)	117 (36.3%)	322 (100%)
Increased blood sugar decreases the functions of tissue and slows healing of post wound	190 (59%)	132 (41%)	322 (100%)
Increased tissue blood pressure delayed wound healing	150 (46.6%)	172 (53.4%)	322 (1000%)
Immune suppressive virus example HIV//Aids causes the immune cell to function inefficiently	210 (65.3%)	112 (34.7%)	322 (100%)

Table 2b:
Respondents' opinion on co-morbidities factors influencing postoperative wound healing n=322

Opinion co-morbidities	Frequency	Percentage
Positive opinion	189	58.7%
Negative opinion	133	41.3%
Total	322	100%

The results presented in Table 3a showed that 188 (58.4%) respondents agreed that high protein diets may enhance wound healing while 134 (41.6%) respondents disagreed. On deficiency of vitamin C causing decreased synthesis which delays wound healing 195 (60.6%) patients agreed and 127 (39.4%) patients disagreed. Two hundred and four (63.4%) respondents agreed that infections delay wound healing while 118 (36.6%) respondents disagreed out of the 322 respondents used in this study, 201 (62.4%) agreed that contaminants like foreign bodies caused infection and delays wound healing while 121 (37.6%) respondents agreed

Table 3b shows that respondents with positive opinion on systemic factor influencing postoperative wound healing were 189 (58.7%) and respondents with negative opinion on systemic factors influencing postoperative wound healing was 133 (41.3%).

Table 3b shows that 197 (61.2%) respondents had positive opinion while 125 (38.8%) respondents had negative opinion towards local factors determinants on postoperative wound healing

Table 3a.
Responses of respondents' opinion on local factors associated with wound healing in a tertiary health facility in Calabar. n=322

Statement	A	D	Total
High protein diets may have enhanced wound healing	188 (58.4%)	134 (41.6%)	322 (100%)
Deficiency of vitamins C causes decreased synthesis which delay wound healing	195 (60.6%)	127 (39.4%)	322 (100%)
Infections delay wound healing by decreasing blood supply to the area	204 (63.4%)	118 (36.6%)	322 (100%)
Contaminants like foreign bodies causes infections and delay wound healing	201 (62.4%)	121 (37.6%)	322 (100%)

Table 3b.
Respondents' opinion on local factors influencing wound healing n=322

Opinion on local factors associated with wound healing	Frequency	Percentage
Positive opinion	197	61.2%
Negative opinion	125	38.8%
Total	322	100%

Table 4a.
responses on respondents' opinion on systemic factors associated with postoperative wound healing in a tertiary health facility in calabar n=322.

Statement	SA	D	Total
Wound healing is slow with the elderly due to decreased protein turnover rate	212 (65.8%)	110 (34.2%)	322 (100%)
Wound heals faster in younger patients than older patients because they are less susceptible to infection	188 (58.4%)	134 (41.6%)	322 (100%)
Wound heals faster in slim patients than fat patient due to less fat in their body	164 (51%)	158 (49%)	322 (100%)
Obese patients experienced a delay in wound healing because of excessive adipose tissue	190 (59%)	132 (41%)	322 (100%)

Table 4a revealed that out of the 322 respondents used in this study, 212 (65.8%) agreed that wound healing is slow with elderly due to decreased protein turnover rate, while 110 (34.2%) disagreed. One hundred and eighty-eight (58.4%) respondents agreed that wound heals faster in younger patients than older patients because they are less susceptible to infection man adult while 134 (41.6%) respondents disagreed. On wound healing faster in slim patients than fat patients, 164 (51%) respondents agreed and 158 (49%) disagreed. One

hundred and ninety (59%) respondents agreed that obese patients experienced delay in wound healing because of excessive adipose tissue

Table 4b.
Respondents' responses on opinion on systemic factors determinant of post- operative wound healing in UCTH

Opinion systemic factors influencing wound healing	Frequency	Percentage
Positive opinion	189	58.7%
Negative opinion	133	41.3%
Total	322	100%

Result presented in Table 5 revealed that out of the 50 respondents with no formal education, 10 (20%) had positive opinion while 40 (80%) had negative opinion towards co-morbidities factors influencing postoperative wounds healing. On primary education 20 (30.8%) respondents had positive opinion while 45 (69.2%) respondents had negative opinion towards co-morbidities factors as determinants of post-operative wound healing. Seventy-four (63.2%) respondents with secondary education had positive opinion while 43 (36.8%0 respondents had negative opinion towards co-morbidities factors as determinants of postoperative wound healing. On tertiary education, majority of the respondents 85 (94.4%0 had positive opinion while 5 (5.6%) respondents had negative opinion on co-morbidities factors as determinants of postoperative wound healing.

Table 5:
Cross tabulation between patients' level of education and opinion on co-morbidities factors associated with postoperative wound healing

Level of education	Patients' opinion on co-morbidities factors influencing postoperative wound healing		Total
	Positive opinion	Negative opinion	
No formal education	10 (20%)	40 (80%)	50 (100%)
Primary education	20 (30.8%)	45 (69.2%)	65 (100%)
Secondary education	74 (63.2%)	43 (36.8%)	117(100%)
Tertiary education	85 (94.4%)	5 (5.6%)	90 (100%)
Total	189	133	322

Table 6:
Chi square test (Cross tabulation) between level of education and patients' opinion on co-morbidities factors as determinant of postoperative wound healing . N=322

	Value	Df	Assympt. sign 2 sided
Pearson chi square	18.808	3	.000
Likelihood ratio	19.161	3	.000
Linear-by-linear association	18.595	1	.00
No of valid clients	322		

a. *0 cells (.0%) have expected count less than 5. The minimum expected count is 7.815 (P<0.05).*

The result in table 6 on chi-square test analysis between level of education and opinion of patients on co-morbidities factors influencing postoperative wound healing revealed that (.0%) have expected count less than 5. The minimum expected count is 7.815 which is greater than 5, since the minimum expected count of 7.815 is greater than the expected count of 5, the null hypothesis is rejected. It therefore means that level of education is associated with opinion, the higher the level of education, the more positive opinion is.

Table 7:
Independent t-test analysis of difference between gender and patients opinion on systemic factors as determinants of postoperative wound healing in a tertiary health facility in calabar. n=322

Patients' opinion	Gender	N	X	SD	t-cal	crit-t
Positive opinion	Male	93	14.05	1.87	1.88	1.98
	Female	229	19.40	1.81		
Negative opinion	Male	93	16.05	1.98	1.24	1.98
	Female	229	16.40	2.1		

Not significant at 0.05 level (p>0.05) df = 320, crit t=1.98

The result as presented in Table 7 revealed a non-significant difference between males and females opinion on systemic factors influencing postoperative wound healing. With calculated t-values of 1.24 and 1.88 being less than the critical t-value of 1.98 with 320 degrees of freedom needed at 0.05 level of significance

DISCUSSION

The result from this study shows that majority of the patients had positive opinion toward co-morbidities factors associated with wound healing. This finding was supported by Yao et. al (2013) whose study revealed prolonged and non-healing of connective tissue associated with common disease such as metabolic disorders, hypertension, diabetes and neuropathy. Also, in line with the above was a study conducted by Ahmed et.al (2010) in their study in wound healing which compared hypertensive and normotensive patients undergoing surgery in terms of length , findings demonstrated that hypertension was associated with wound healing due to poor tissue oxygenation.

Our finding also shows that the opinion of the patients towards local factors influencing postoperative wound healing was positive. Although some patients had negative opinion towards it. This is in tandem with the findings of Cordero-Ampuero & Dios (2010), whose study showed abnormal surgical documented a link between surgical site infection and prolonged healing time of surgical wounds. Guo & DiPietro (2010) also attested that nutritional status of surgical patients is important in their preoperative management and postoperative recovery.

Majority of the patients had positive opinions on systematic factors associated with wound healing as majority of them mentioned that wound healing is slow with the elderly due to decreased protein turnover rate. The above findings are in line with study conducted by Nwankwo et. al (2013) which documented that age was significantly associated with surgical site infection and consequently timing of wound healing. Similarly, Akinjoola et al (2008) supported the above when their studies of wound healing revealed that the patients' age adversely affects surgical wound healing outcome. Also

Dickhaut et. al (2014) also was at par with the above finding and stated that obesity was associated with a number of postoperative complications.

There was a positive opinion of patients on co-morbidities with tertiary education and secondary education. That means the higher the level of education. The more positive opinion on co-morbidities factors associated with postoperative wound healing. This assertion is supported by Guo & DiPietro (2010) who suggested that patient should be educated on factors affecting wound healing and that education is needed for patients to adapt to positive lifestyle activities that will promote wound healing. This calls for awareness creation for patients with these disease conditions pre-operatively and postoperatively so as to promote postoperative wound healing in surgical patients.

The result also shows a statistical non-difference between gender and patients' opinion on systemic factors as a determinant to postoperative wound healing. The males were not different from the females on their opinion on influence of systemic factors on postoperative wound healing. The above findings are in line with Hawkins and Abrahamse (2007) who discovered a delay in wound healing associated with age and sex due to altered immune response such as delayed t-cell infiltration into wound area with alterations in Chemokine production and reduced macrophage, phagocytic capacity in both males and females. Engeland, Bosch, Cacioppo & Marucha (2006) was at variance with the above findings and stated that males experience faster wound healing than females because the females' skin suffer reduced elasticity and are prone to prolonged wound healing. In the study, majority of the respondents were females, males were very few. The non-statistical difference in both sexes may be due to the fact that the two groups are from similar environment and they are not well informed about these systemic factors and should be well informed. There is need to sensitize them appropriately on these factors.

From the findings, it can be concluded that level of education plays a vital role on patients' opinion on influence of co-morbidities factors on postoperative wound healing this is because the higher the level of education the more positive their opinion is. Also, there was no difference between patients' gender on systemic factors such as age and obesity on wound healing.

Based on the major findings of this study, it is recommended that patients admitted into thes surgical wards be thoroughly educated on determinants factors associated with postoperative wound healing. Much awareness should be done on positive life style activities needed for good living by nurses from primary to secondary to tertiary health care centres to patients and advise them to adhere strictly for promotion of health and activities of daily living.

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