

Original Article

Patient Satisfaction and Associated Factors on In-patient Nursing Service at Public Hospitals of Dawro zone, Southern Ethiopia

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Abstract

Background: Patient satisfaction is a key determinant and a legitimate measure for quality of hospital care. Despite a lot of efforts have been done by government to improve patient satisfaction, there is no clear evidence for decision makers on it specifically in the study area. Thus, the aim of this study was to assess level of patient satisfaction and associated factors on in-patient nursing service at public hospitals of Dawro zone, Southern Ethiopia.

Methods: A cross-sectional survey was employed at public hospitals of Dawro Zone from March 15-April 15, 2018. A sample of 385 patients were included by consecutive sampling technique. Data were collected using Newcastle Satisfaction with Nursing Scale. Data were collected by exit interviewee. Data entry and analysis was with Epi-Data version 3.1 and SPSS version 23, respectively. The overall of patients' satisfaction was measured by the mean of the percentage of maximum scale score. Predictor's variables were identified by linear regression. Narration and summary tables and were used to present the findings.

Results: The overall magnitudes of satisfaction among patients admitted at public hospitals of Dawro zone was 59.2%. Having diploma and above, absence of assigned nurses, admitted at first class, perceived expectation on nurse's responsiveness score, perceived experience on compassionate respectful and care score, and perceived experience on institutional aspect score have statistically significant association with patient satisfaction.

Conclusion: The magnitude of patients' satisfaction with inpatient nursing service was low relative to other literatures and affected by their perceived expectation and presence of assigned nurse for them. Thus, specific number of nurses should be assigned through regular nurse to bed rotation, and nurses should include patients' expectations in to their nursing care plan.

Key words: Patient Satisfaction, Nursing service, Dawro Zone, Public Hospitals.

Introduction

Patient satisfaction is patient's perceived opinion about the total experience of health care received from nursing staff. Patient satisfaction is connected with nursing care, nurses, and the organizational environment (Molla, et al.,2014; Tirsit et al., 2015). It influences adherence to treatment, health services utilization and general attitudes towards the health care system. Apart from being an important indicator of quality nursing care, patient

satisfaction has a reciprocal effect, meaning it can be used to improve nursing care that will in turn increase satisfaction (Alemu, Shegaw Jira, 2014; Coban, Gulay Yurdagul, 2014; Molla, et al.,2014; Belayneh, 2016).

Nursing care is the only hospital service having a direct and strong relationship with overall patient satisfaction. It is an accepted crucial indicator of the quality and effectiveness of care as well as an important part of value-based health care.

However, the overall level of patient satisfaction with the inpatient nursing care was low in developing countries including Ethiopia (Izumi, 2011; Ayyub, et al., 2015; Hadgu Gerensea and Birhane, 2015; Tirsit 2015; Belayneh, 2016; Mende et al., 2017; Tadese Jiru, 2017).

According to different studies, the amount and type of information provided for patients was poor, nurses' awareness about patient needs and keeping privacy of patients in all wards was also low. Similarly, nurses were not introducing themselves to patients, patients were not usually asked for informed consent. This results poor satisfaction of the patient towards nursing service in particular and hospital service in general (Shawa, 2013; Ghiwet, Lain Kidanu, 2014; Mende Mensa, Azeb Taye, Samson Katene Abera, 2017). Day of hospitalization patient educational status, ward and the waiting time to get bed, being widowed and divorced, perceived institutional aspects factor score and patient experience with nursing care also the factors associated with patient satisfaction (Darega, et al., 2016; Legesse1 et al., 2016; Tadese Jiru, 2017).

Ethiopian Federal Ministry of Health (FMOH) has been engaged to improve the quality of nursing care also patient satisfaction across the country in the last 10 years. Among these patient Compassionate, Respectful and Caring(CRC) initiative was started, national dressing code was launched, and national nursing service quality improvement standards and audit tools were developed (FMOH:, 2016a, 2016b).

Having information about patient satisfaction and its associated factors is very important for hospital managers to improve nursing service quality by identifying gaps on resource allocation, training and skill. However, clear published evidences on in-patient satisfaction with nursing service were not available at public hospitals of Dawro zone. Therefore, the aim of this study was to assess level of patient satisfaction with nursing services and its associated factors in public hospitals of Dawro zone.

Methods and Materials

Study Settings and period: Facility based cross sectional study was conducted from March 15-April 15, 2018 at public hospitals of Dawro zone, Ethiopia. The hospitals (Terchageneral hospital and Gessa primary hospital) serves for more than

602,000 catchment populations. There are a total of 120 beds in Tercha general hospital and 25 beds in Gessa primary hospital. Moreover, there are a total 98 nurses (all type) in both hospitals.

Study Design: Facility based cross-sectional study design was employed

Population: The source populations were all patients at public hospitals of Dawro zone. While, the study populations were sampled in-patients aged 18 years and above and were spend more than two night in the hospital. Too critically ill and unable to communicate were excluded from the study.

Sample size determination and Sampling technique:The sample size was calculated by Epi-info version 7 using single population proportion formula, with the following assumptions: 95% CI, 5% margin of error and magnitude of patient satisfaction with in-patient nursing care at Axum St.Marry Hospital Tigry region Ethiopia 65%.(Hadgu Gerensea and Birhane, 2015). Considering 10% non-response rate, the final sample was **385**. Patients were allocated proportionally based on Hospitals patient load, 316 inpatients from Tercha General Hospital and 69 inpatients from Gessa Primary Hospital. Consecutive sampling technique was used to select study participants from each hospitals

Study variables: The dependent variable was patient satisfaction towards nursing service. The independent variables were: **Patient related factors:** Demographic and socio economic factors (age, sex, educational status, marital status, occupation status, and average monthly income), history of admission, duration of hospital stay, perceived patient expectation towards nursing service.**Hospital related factors:**Class of admission(1st room, 2nd room and 3rd room from nursing station), presence of assigned nurse, admission ward, payment for the service.**Nurse-patient interaction related factor:**Perceived patient experience on nurses CRC, perceived patient experience on institutional aspects.

Data collection Instrument: Section A:Socio-demographic and Hospital related factors: That had 14 items. **Section B:**Perceived patient expectation on nursing service scale:12 items five point Likert scale (1=strongly disagree, 5=strongly agree) (Shawa, 2013; Ghiwet, Lain Kidanu, 2014). The Cronbach's alpha in this study was 0.85.**Section C:**Perceived patient experience towards CRC

scale: 7 item five point Likert scale (1=strongly disagree, 5=strongly agree). The Cronbach's alpha in this study was 0.883. **Section D:** Perceived patient experience towards hospital aspects of care scale: 7 item five point Likert scale (1=strongly disagree, 5=strongly agree)(Tadese Jiru, 2017). The Cronbach's alpha in this study was 0.894. **Section E:** Newcastle Satisfaction with Nursing Scale: 19 item five point Likert scale (1=Not at all satisfied, 5=Completely satisfied) adapted from literatures in Ethiopia (Legesse1 and Waju Beyene Salgedo, 2016; Tadese Jiru, 2017). The Cronbach's alpha in this study was 0.966.

From the total of 26 patient expectation and experiences on nursing service scales, 13 items are negatively worded to minimize affirmation bias. These negatively worded items are reversely coded during analysis

Data quality management: Standard tool; Newcastle satisfaction with nursing scales (NSNS) was used to measure patient satisfaction. The tool was initially prepared in English and translated to local language (Dawrotswa) then back translated to English to see the consistency of translation. Pre-test was conducted on 5% (20 admitted patients) at neighboring hospital. Clarifications and corrections were made on vague questions. Two days training was given for data collectors and supervisors. Each questionnaire were checked daily for omissions, legibility of handwriting, and completeness by the supervisors and the principal investigator.

Data management and analysis: The data were entered into Epi-Data version 3.1 and exported into SPSS version 23 software where recoding, categorizing, computing, counting and other statistical analysis were done. Univariate analysis like frequencies, percentage, mean, standard deviation and summary tables were used for describing and presenting the finding. The overall of patients' satisfaction was measured by the mean of the Percentage of Maximum Scale Score (PMSS) as calculated by the following formula
$$\left[\frac{\text{actual score} - \text{potential minimum score}}{\text{potential maximum score} - \text{potential minimum score}} \right] \times 100$$
 (Legesse1 and Waju Beyene Salgedo, 2016). For the purpose reducing a large number of variables into a smaller number of components, Principal Component Analysis (PCA) was conducted. Assumptions of PCA was checked and all results showed that Kaiser-Meyer-Olkin

(KMO) was greater than 0.5 and Bartlett's test of sphericity was statistically significant ($p < 0.001$).

From each data collection scales, items having communality less than 0.5, complex structure greater than 0.4, and /or presence of substantial correlation ($r > 0.3$) were reduced. Three components were extracted from perceived patient expectation on nursing service scale, one component was extracted from perceived patient experience towards CRC scale, one component was extracted from perceived patient experience towards hospital aspects of care scale and one component was extracted from Newcastle Satisfaction with Nursing Scale based on eigenvalue (> 1) and the total variance explained by the extracted component ($> 60\%$). Furthermore, factor score was computed for each extracted components for further linear regression analysis. (FMOH, 2016). First, assumptions of linear regression (normality, linearity, and homoscedasticity) was checked. The results showed that all were fitted. Simple linear regression was conducted to identify candidate variables for multiple linear regressions; significance level of p-value < 0.25 was taken as a cut of point for identifying candidates. Multi variable linear regression analysis was conducted to identify independent factors associated with patient satisfaction; significance level of p-value less than 0.05 at 95% CI was taken as a cut of point and unstandardized β was used for interpretation. The final fitted model was constructed using backward elimination method. For the final fitted model, presence multicollinearity was checked and it has no strong correlation (Variance Inflation Factor (VIF) < 10).

Ethics approval and consent to participate

Letter of Ethical clearance was obtained from Institutional Review Board of Jimma University, Institute of Health Sciences after approval of the proposal. Official permission was obtained from Dawro zone health department to respective hospitals and permission was obtained from managers of the facilities.

The study participants were informed that participating in this study was voluntarily. Verbal informed consent was obtained from each study units and recorded by data collectors. Identifying images or clinical details of participants were not applicable in this manuscript.

Results

Socio demographic characteristics : A total of 369 admitted patients were participated in the study with response rate of 95.8%. Among all patients, 189 (51.2%) were female. The mean age of respondents was 32.94 (SD=10.9). More than half of (54.7%) of the participants were protestant. Majority of the respondents 340(92.1%) were Dawro. Two hundred four (55.3%) of respondents were from rural area. Two hundred forty two (65.6%) of study subjects were married. Concerning educational status, 74(20.1%) of the respondents could not read and write. One handed sixteen (31.4%) of the respondents were farmers. The median monthly family income of respondents was 1,000 ETB (**Table_1**)

Hospital characteristics: Regarding the admission wards, 96(26%) of the patients were admitted in Gynecology/Obstetrics ward, 144 (39%) were admitted to Surgical ward. One third of patients 118(32%) were served with out of pocket payment. Specific nurse was assigned for 176(47.7%) patient. Duration of admission, 337(91.3%) of participants stayed 2-10 day. On the other hand, 172(46.6%) of patients had admitted for the first time and 114(30%) patient had history of repeated admission in those selected Hospitals (**Table_2**).

Patient expectation on hospital nursing services: The overall level of patient expectation on hospital nursing services mean score was 58.61% (SD=15.5). Fifty (13.6%) of participants strongly agreed that they expected nurses to be cheerful and 100(27.1%) of participants agreed that they were expecting nurses to be kind. Most participants 204(55.3%) agreed that they expected nurses to be communicative with them. Some of 18 (4.9%) of participants strongly disagree that they expected nurses to be meet their needs (**Table_3**).

Patients experience on CRC: The overall level of patients experience on CRC mean score was 61.67% (SD=23.78). Half of (53.1%) participants agreed that they experience that nurses provide the chance to them to ask any question. And 62(16.8%) of participants strongly agreed that they experience that nurse took informed consent during the procedure. Nearly one third 108(29.3%) of participants disagree that they experience that nurses keep privacy during the procedure (**Table_4**)

Patient experience on hospital aspects of nursing service : The overall level of patient experience on hospital aspects of nursing service mean score was 62.3% (SD=12.02). More than half (57.2%) participants were agreed on goodness of the admission procedure. Two hundred ten 210(56.9%) of participants agreed on available drugs in the hospitals pharmacy. Some of 60(16.3%) of participants disagree on the privacy nurses kept during the procedure. Two hundred twelve (57.5%) of participants agree on the room was not over crowded (**Table_5**)

Overall level of patients' satisfactions with nursing service: The overall level of patient satisfactions with nursing service mean score was 59.2% (SD=21). Twenty percent of patients were completely satisfied with the amount of time that nurses were spending with them, about 155(42%) of patients were quite satisfied on nurses coming to patients up on call, 97(26.3%) of respondents were very satisfied on the amount of information nurses give to you. Some patients 51(13.8%) were barley satisfied on the way nurses made you feel at home and 22(5.9%) were not at all satisfied with nurses helped their relatives mind rest, 89(24.1%) of respondents were very satisfied with the manner nurses doing their work. One third 115(31.2%) of participants were very satisfied with nurses willingness to respond requests (**Table_6**)

Factors associated with patient satisfaction

All variables which had shown statistically significant association during the bivariate linear regression such as; sex, occupation status, educational status, presence of particular nurse assigned to the patient, admission ward, duration of hospital stay, and class of admission, perceived expectation on nurses responsiveness factor score, perceived expectation on nurses communication factor score, perceived expectation on nurses politeness factor score, perceived experience on CRC factor score, and perceived experience institutional aspect factor scores were candidate for multivariable linear regression. In multivariable linear regression analysis, seven variables were found to be independent factors associated with patient satisfaction.(**Table-7**)

As compared to patients who were primary school, having diploma and above leads to decrement of patient satisfaction score by 0.267 (95%CI= -0.418,-0.115, P-value <0.001).

As compare to participants who were farmers in occupation, being merchant leads to increment of patient satisfaction score by 0.314 (95%CI=0.14, 0.488, P-value=.001). Absence of nurses assigned to the patient leads to decrement of patient satisfaction score by 0.482 (95%CI= -0.648,-0.315, P<0.001). As compared to patients admitted third room far from the nursing station, admitting in the second room leads to an increment of patient satisfaction score by 0.192(95%CI= 0.065,0.32, P=0.003). Also, Being admitted in the first room leads to an increment of patient satisfaction score by 0.341 (95%CI= 0.273, 0.409, P<0.001)

In relation to patient expectation, ten unit increment in perceived expectation on nurses

responsiveness factor score resulted in 3.41 unit increments in patient satisfaction factor score of patients (95%CI=2.73,4.09, P<0.001). Similarly, 10 unit increment in perceived expectation on nurses communication factor score resulted in 2.1 unit increments in patient satisfaction score of patients (95%CI=1.39,2.82, P<0.001). Ten unit increment in the perceived experience on CRC factor score leads to an increment of patient satisfaction score by 1.71(95%CI=0.81-2.62, P<0.001). Likewise, 10 unit increment in the perceived experience on institutional aspect factor score leads to an increment of patient satisfaction score by 1.12 (95%CI= 0.37, 1.88, P<0.001).

Table 1: Socio demographic characteristics of participants in public hospitals of Dawro zone, 2018.

Category	Characteristics	Frequency (n=369)	Percentage
Sex	Male	180	48.8
	Female	189	51.2
Age	18-24 years	66	17.9
	25-34 years	154	41.7
	35-44 years	98	26.6
	>=45 years	51	13.8
Residence	Urban	165	44.7
	Rural	204	55.3
Marital status	Never married	89	24.1
	Divorced	21	5.7
	Married	242	65.6
	Widowed	17	4.6
Educational status	Cannot read and write	74	20.1
	Primary school	135	36.6
	Secondary school	71	19.2
	Diploma and above	89	24.1
Occupational	Gov't employee	107	29
	Farmer	116	31.4
	Student	42	11.4
	Merchant	56	15.2
	Unemployed	48	13

Table 2: Hospital related factors of patient satisfaction in public hospitals of Dawro zone, 2018

Category	Characteristics	Frequency (n=369)	Percentage
Admission ward	Medical	144	39
	Surgical	129	35
	Gynecology/Obstetrics	96	26
Payment for the service	Free	118	32
	Out of pocket payment	251	68
Presence of assigned nurse to you	Yes	176	47.7
	No	74	20.1
	I am not sure	119	32.2
Class of admission from the nursing station.	First class	101	27.4
	Second class	96	26
	Third class	172	46.6
Length of hospital stay	2-10day	337	91.3
	11-22days	18	4.9
	>22days	14	3.8
Admission history	Yes	114	30.4
	No	255	69.1

Table_3:Expectation of inpatients on hospital nursing services care items of nursing service at public hospitals of Dawro zone, southern Ethiopia 2018 (n=369)

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Nurses are kind	82(22.2)	74(20.1)	63(17.1)	100(27.1)	50(13.6)
Nurses are cheerful	16(4.3)	96(26)	65(17.6)	141(38.2)	51(13.8)
Nurses are responsive	36(9.7)	79(21.4)	33(8.9)	164(44.4)	57(15.4)
Nurses are friendly	25(6.8)	56(15.2)	53(14.4)	166(45)	69(18.7)
Nurses communicate to me	25(6.8)	42(11.4)	35(9.49)	204(55.3)	63(17.1)
Nurses respect my beliefs	22(5.9)	36(9.7)	26(7.1)	207(56.1)	78(21.1)
Nurses meet all my needs	18(4.9)	17(4.61)	36(9.7)	231(62.6)	67(18.2)
Nurses are lenient	60(16.3)	59(16)	43(11.7)	173(46.9)	34(9.21)
Nurses are polite	43(11.7)	79(21.4)	34(9.2)	159(43.1)	54(14.6)

Table_4: Perception of inpatients towards nurses companionate, respectful and care items of nursing service at public hospitals of Dawro zone, southern Ethiopia, 2018 (n=369)

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The nurse provide the chance to ask any question	32(8.7)	57(15.4)	27(7.3)	196(53.1)	57(15.4)
The nurse took informed consent during the procedure	37(10)	49(13.3)	29(7.9)	192(52)	62(16.8)
The nurse explained the results of the proceed	30(8.1)	55(14.9)	28(7.6)	196(53.1)	60(16.3)
Nurses involve me during change care	29(7.9)	49(13.3)	39(11)	184(49.9)	68(18.4)
Nurses provide information when planning	29(7.9)	35(9.5)	43(12)	208(56.4)	54(14.6)
Nurses keep privacy during the procedure	54(15)	108(29.3)	36(9.8)	111(30.1)	60(16.3)

Table 5: Perception of inpatients towards institutional aspects items of nursing service at public hospitals of Dawro zone, southern Ethiopia 2018. (n=369)

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The admission procedure were good	7(1.9)	65(17.6)	31(8.4)	211(57.2)	55(14.9)
The drugs were available in the hospital	9(2.4)	62(16.8)	24(6.5)	210(56.9)	64(17.3)
Nursing station is visible	20(5.4)	51(13.8)	26(7)	221(59.9)	51(13.8)
The room was not over crowded	8(2.2)	35(9.49)	46(12)	212(57.5)	68(18.4)
The bed is comfortable	10(2.7)	36(9.76)	32(8.7)	227(61.5)	64(17.3)
The discipline was good	7(1.9)	60(16.3)	46(12)	198(53.7)	58(15.7)
The room was clean	17(4.6)	33(8.9)	28(7.6)	225(61)	66(17.9)

Table 6: Inpatient satisfaction accords to patients experience with nursing service of study participants at public hospital of Dawro zone, southern Ethiopia, 2018 (n=369).

	Not at all satisfied	Barely satisfied	Quite satisfied	Very satisfied	Completely satisfied
The amount of time spent with you	16(4.3)	40(10.8)	146(39.6)	95(25.8)	72(19.5)
Availability of nurses around you needed	7(1.9)	59(16)	150(40.6)	91(24.7)	62(16.8)
How nurses quickly came when you call	16(4.3)	52(14.1)	155(42)	84(22.8)	62(16.8)
The way nurses made you feel at home	25(6.8)	51(13.8)	136(36.9)	91(24.7)	66(17.8)
The amount of information nurses give to you	12(3.2)	48(13)	147(39.9)	97(26.3)	65(17.6)
Frequency on nurses check your conditions	9(2.4)	45(12.2)	170(46.1)	80(21.7)	65(17.6)
Nurses helpfulness	15(4)	39(10.6)	153(41.5)	94(25.5)	68(18.4)
The way nurses explained things to you	18(4.9)	49(13.3)	161(43.6)	72(19.5)	69(18.7)
How nurses helped your relatives mind rest	22(5.9)	44(11.9)	159(43.2)	79(21.4)	65(17.6)
The manner nurses doing their work	14(3.8)	43(11.6)	163(44.2)	89(24.1)	60(16.3)
Nurses treatment of you as an individuals	15(4.1)	37(10)	154(41.7)	98(26.6)	65(17.6)
How nurses listened your worries and concerns	8(2.2)	40(10.8)	155(42)	102(27.6)	64(17.4)
The amount of freedom nurses give to you	9(2.4)	20(5.4)	123(33.3)	145(39.4)	72(19.5)
Nurses willingness to respond requests	16(4.3)	52(14.1)	127(34.4)	115(31.2)	59(16)

Table 7: Independent factors associated with patient satisfaction in public hospitals of Dawro zone, 2018

Category	Characteristics	Unstandardized Coefficients	95.0% CI for β	P-value
Educational status	Primary school*	1		
	Diploma and above	-0.267	(-0.418,-0.115)	<0.001
Occupational status	Farmer*	1		
	Government	0.153	(0.006- 0.301)	0.042
	Merchant	0.314	(0.140, 0.488)	0.001
Presence of assigned nurse	Yes*	1		
	No	-0.482	(-0.648,-0.315)	0.001
	I am not sure	-0.279	(-0.422,-0.136)	0.001
Class of admission	First class	0.396	0.230, 0.563	0.001
	Second class	0.192	0.065, 0.32	0.003
	Third class*	1		
Perceived expectation on nurses responsiveness factor score		0.341	0.273,0.409	<0.001
Perceived expectation on nurses communication factor score		0.210	0.139,0.282	<0.001
Perceived expectation on nurses politeness factor score		0.107	0.050, 0.164	<0.001
Perceived experience on CRC factor score		0.171	0.081 0.262	<0.001
Perceived experience institutional aspect factor score		0.112	0.037,0.188	<0.001

Constant=0.024, R Square =0.762., * reference group, Dependent variable:-patient satisfaction factor score. Max VIF=3.6 (no Multicollinearity: at VIF<10).

Discussion

The overall patient satisfaction mean score with nursing services among patients who were 59.7%. This result was comparable with the study conducted in St. Marry Hospital and public hospitals of Guji zone which was 65% and 55.9%, respectively (Hadgu Gerensea and Birhane, 2015; Tadese Jiru, 2017). The present finding is higher than the study conducted in Arbaminch general hospital and Felegehiwot hospital which was 40.9% and 44.9%, respectively. This difference might be due to presence of high patient load in Arbaminch and Felegehiwot hospitals as compared to the study hospitals which was nurses provide care for more than 16 patients per day unlike the present study which was 9 patients per day (Belayneh, 2016; Mende Mensa, Azeb Taye, Samson Katene Abera, 2017).

However, the present finding is low when compared to studies conducted in Tikur-Anbassa specialized Hospital which was 90.1% (Molla, Mulugeta

Berhe, Ashenafi Adama, 2014). The difference might be related to difference in the level of Hospital that the latter is referral Hospital they may have adequate technology for the implementation of better nursing care practices.

When we see independent factors for level of patient satisfaction: having diploma and above in educational status leads to decrement of patient satisfaction score by 0.267 as compared to participant with primary school. This may be the result of patients with higher education being able to access information about the duties of the nurse. They may also have read about the patients' charter and know about the responsibilities of the nurse. If these responsibilities are not carried out well, they may not be satisfied. Rather, those with limited education have no access to this information and tend to be satisfied with the nursing care given since they have nothing to compare among services. A study in Jimma University showed that patients with no formal

education were more satisfied by 76.9% than their counterparts. Also, study in Felegehiwot Hospital showed that employees were 58% less likely to satisfy than farmers (Tirsit Woldeyohanes, Tewodros Woldehaimanot, Mirkuzie Kerie, Mubarek Mengistie, 2015; Belayneh, 2016).

The result showed that, unavailability of specific nurse assigned to the patient leads to decrement of patient satisfaction score by 0.482. It is similar in one study in Felegehiwot referral hospital, which identified as those patients who had one nurse in charged/assigned were 1.2 times more satisfied than those patients not assigned (Belayneh, 2016). This might be due to if there is a nurse assigned for specific number of patients, the nurse feels more responsible and conduct every aspects of care based on the guideline. In addition, if patients know the specific nurse which assigned to them, they may feel freedom to communicate about their conditions, to call nurse when they need, even to judge about frequency of visit.

Class of admission was also one of the factors significantly associated with satisfaction with nursing care. Being admitted in the first class (near the nursing station) leads to increment of patient satisfaction score by 0.341unit as compared to those patients admitted in the third class. This might be because the number of patients that were admitted in the first class in this study were small in number (27.4%) as compared to 3rd class (46.6%), this may leads to different opportunities to the patient, like to have frequent visiting, for communicating with nurses and that first class wards may not be overcrowded by visitors. This may have positive influence on their satisfaction. This finding is in agreement with study done on Dessie referral hospital which revealed that first class were more likely to be satisfied as compared to patients admitted in the second and third class(Kokeb et.al., 2014).

According to this study, there is positive linear association between patient expectation towards nursing service and patient satisfaction. Ten unit increment in perceived expectation on nurses' responsiveness factor score resulted in 3.41 unit increments in patient satisfaction score of patients. Other studies also support this finding, study in Kenyatta National Hospital, it was revealed that there was a strong positive linear correlation

between patient expectation towards nursing care and patient satisfaction. Another study in Hawasa Referral Hospital showed a positive linear significant association, 10 unit increase in expectation score will lead to 3.45 increments in patient satisfaction (Shawa, 2013; Legesse1 and Waju Beyene Salgado, 2016). This might be due to if patients got what they expected from nursing service they may become more communicative with the patient about their worries and concerns, they involved themselves in caring process, they feel hospitals as home and this leads high satisfaction score

The present study also showed a significant positive association between perceived institutional aspect factor score with patient satisfaction score. Ten unit score increase in perceived institutional aspects will lead to 1.12 unit increments in patient satisfaction factor score. This finding also supported by study conducted in Hawasaa University specialized and NageleBorena and Adola General Hospital pointed out that satisfaction was also positive association with perceived institutional aspect, if the perceived needs of the patient fulfilled they would have been more satisfied with nursing care they receive(Legesse1 and Waju Beyene Salgado, 2016; Tadese Jiru, 2017).

Limitations of the study: Since patients were interviewed in the hospital setting, they may give responses favoring the care provider resulting in social desirability bias.

Conclusion and Recommendation

The level patient satisfaction towards nursing service in public hospitals of Dawro zone was low when compared with other literature. Educational status, occupational status, class of admission, presence of assigned nurse, patient expectation and patient experience were independent factors of patient satisfaction. Therefore, specific nurse should be assigned for each patient through frequent monitoring of patient to nurse ratio in the ward, nurses should improve their communication skill with the patient, and particularly they should show respectful, compassionate and caring behavior to the clients. Moreover, it is better if nurses include patients' perceived expectations during nursing assessment at admission so as to incorporate in the nursing care plan

List of Abbreviations: CRC: Compassion, Respect and Care; NSNS: Newcastle Satisfaction with Nursing Scale; PCA: Principal Component Analysis; KMO: Kaiser-Meyer-Olkin

Ethics approval and consent to participate :

Letter of Ethical clearance was obtained from Institutional Review Board of Jimma University, Institute of Health Sciences after approval of the proposal. Official permission was obtained from Dawro zone health department to respective hospitals and from managers of the facilities. The study participants were informed that participating in this study was voluntary, and verbal informed consent was obtained from each study units and recorded by data collectors. Identifying images or clinical details of participants were not applicable in this manuscript.

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