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Research Article

Effect of Continuous Educational Intervention to Improve Nursing Documentation at a Public Hospital in Yemen

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ABSTRACT
Nursing documentation is the record of care that is planned or given to individual patients and clients by qualified nurses or other caregivers. Poor nursing documentation in Yemen public hospitals was found. This problem affects effective communication of patient status with other care givers. The aim of this study is to evaluate the effectiveness of a continuous education module to improve the quality of nursing documentation in a government hospital in Sana'a city, Yemen. The design used was an interventional study. The study population was nurses in Al-Kuwait Hospital in Sana'a city. A total of 115 nurses were studied in each of two hospitals. Data were collected by questionnaire and NMCAT audit. Both descriptive and inferential statistical methods were used to analyse the data using SPSS version. Paired sample t-tests and Repeated Measures Analysis of Variance (ANOVA) were used. The dependent variables were knowledge, attitude and performance of nurses and nursing documentation whereas the independent variables were receiving continuous education and nurses' socio-demographic characteristics. There was a significant correlation ($r= 0.997$, $p < 0.001$) between education and knowledge, attitude, and performance of nurses towards nursing documentation. Continuous educational intervention and Knowledge, attitude, performance of nurses influenced towards the quality of nursing education. The manager of the hospital and nursing manager are recommended affording the opportunity to support human resources in the hospital, especially for nurses to participate in continuous education, in accordance with the demands of legislation in nursing education, and to organize the training of nursing documentation.

Keywords: Nursing Documentation, Records, Knowledge, Attitude, Performance, Practices, Yemen, Intervention, Information Motivation Behavioural Skills Model, Quality of Nursing Documentation, Quasi Experimental.

INTRODUCTION

Nursing documentation is the record of care that is planned or given to individual patients and clients by qualified nurses or other caregivers. It is an important part of patient documentation during hospitalization, and is an effective way of indicating nurse practice (Urquhart, Currell, Grant, & Hardiker, 2009). Keeping good records is part of of the standards of nursing procedures in caring for patients. Without clear and accurate nursing records for each patient handover to the next team of nurses will be incomplete. This can affect nursing care given to patients.

Nursing documentation is important for efficient communication within the healthcare professional team and for quality assurance. Keeping good nursing documentation allows us to identify problems that have arisen, and the actions taken to rectify them. In short, the patient's nursing documentation provides a correct account of the treatment and care given and allows for good communication between members in the healthcare team. Keeping good nursing records also allows us to identify problems that have arisen and the action taken to rectify them (Stevens & Pickering, 2010).

Nursing record review of patients is by far the most common method to assess adverse events (AEs) for nursing care. The diligence with which information is recorded may influence the visibility of adverse events. On the other hand, poor quality of the information in patient records may be a cause or a consequence of poor quality of care and may thus be associated with higher rates of AEs (Zegers et al., 2011).

Data from nursing documentation is increasingly being used for patient care planning, quality assessment, research, health planning and allocation of resources. However, lack of accuracy of such secondary data leads to major limitations

in using nursing records as a data source for the evaluation, planning and development of healthcare (Ehrenberg & Ehnfors, 2001).

Quality of nursing records promotes effective communication between health care workers, which facilitates continuity and individuality of care. International organisations state "Quality is the totality of features and characteristics of a product or a service that effects on its ability to satisfy the given needs" (Fitzpatrick, 1996). Quality of nursing records is characterised mainly by five criteria; namely: Accuracy, Validity, Completeness, Reliability and Timeliness.

Accuracy in nursing record refers to whether the collected data is correct and represents what it should. Assessing nurses' reports in patient records can be helpful for improving the accuracy of nursing documentation (Paans, Sermeus, Nieweg, & Van Der Schans, 2010). Records on nursing care will not improve unless accurate, timely and specific information about care delivery is available for ongoing staff training, management, and continuous quality improvement (CQI) efforts (Schnelle, Osterweil, & Simmons, 2005).

Validity in nursing record can be a bit harder, and fixing invalid data often means that there is an issue with a process. Validity of data is determined by whether the data measures that which it is intended to be measured. Validity is a construct that can be used to evaluate the quality of qualitative research studies, including action research. Due to the moral and political aspects of action research; we are compelled to ask whether the results of our inquiries are valid (Feldman, 2007).

Completeness in nursing records refers to whether there are any gaps in the data from what was expected to be collected, and what was actually collected (Paans et al., 2010). Completeness can be generically defined as the extent to which data are of sufficient breadth, depth and scope for the task at hand. Completeness is defined as the degree to which entities and attributes are not missing (Scannapieco, Missier, & Batini, 2005). The reliability of assessments is a major consideration in studies of quality, where so much depends on judgment even when the directive types of standards are used. The major mechanism for achieving higher levels of reliability is the detailed specification of criteria and procedures used for the assessment of care (Donabedian, 2005). There is variation in the level of reliability across the different indicators and some facilities clearly have less reliable data than do others (Mor et al., 2003). Timeliness in nursing record refers to an appropriate time in which information regarding an event must be used before it loses its ability to influence the decision-making process. In addition to accuracy, conciseness, organization, and confidentiality, timeliness is one of the attributes for maintaining appropriate health records (Association, 2010). Poor knowledge of medicines was identified as a contributory factor for errors by both doctors and nurses. Sadat-Ali and colleagues assessed the prevalence and characteristics of medical errors (MEs) in patients admitted to a teaching hospital (Ahmed et al., 2010).

The NMCAT is a short, practical tool that focuses on the content of nursing documentation rather than being restricted to only the legal aspects of nursing documentation. It is a useful, reliable, and valid tool that clinicians, managers and educators can use to monitor aspects of nursing documentation. Health care documentation is not only the responsibility of nurses, but rather an important quality issue for all health care professionals including allied health professionals and medical practitioners. The NMCAT is a short audit tool that uses time sampling methods to capture 24-hours periods of nursing documentation around 1 day after the care is delivered. The study was conducted to evaluate the effectiveness of a continuous education module to improve the quality of nursing documentation in a government hospital in Sana'a city, Yemen.

MATERIALS AND METHODS

This study design used was an interventional study, this study was conducted in Al-Kuwait General Hospital which is a public university hospital for the Faculty of Medicine and Health Sciences students, Sana'a University. It has a total of 297 beds and 150 nurses. A total of 115 nurses (based on sample size estimation), who worked in various wards, units, and departments, from the 150 nurses in the hospital were selected by simple random sampling. The inclusion criteria where they were willing to be respondents and not in a period of sickness, or suspension. The data in this study were obtained using a questionnaire and the Nursing and Midwifery Content Audit Tool (NMCAT). Socio-demographic characteristics studied included age, gender, marital status, educational level, working experience, ward worked and training on nursing documentation received. A continuous education module to improve nursing documentation was conducted in the hospital. The content was delivered by lectures followed by discussions and question and answer session to obtain feedback from each of facilitators and reinforce learning. The NMCAT audit was applied for nursing documentation before the continuous education

module was conducted and 3 months and 6 months after the continuous education intervention. Permission was obtained from NMCAT copyright owner by email before using the NMCAT tool. A total of 300 patient's files before intervention and 300 patient's files 3 months and 6 months after intervention was audited using NMCAT audit. The NMCAT was used to audit a total of 300 nursing records from various units/wards or departments in the hospital. These included the Cardiac Care Unite (9.0%), Obstetrics and Gynecology (9.7%), Male Medical Ward (10.7%), Female Medical Ward (10.3%), Male Surgical Ward (10.37%), Female Surgical Ward (9.7%), Pediatric Department (16.0%), Intensive Care Unit (11.7% ICU) and Oncology Department (12.7%) of the nursing records. This was to ensure the various types of nursing records were covered. The nursing records were audited at various times. The percentage of records audited included from admission to =<24 hours (11.7%), between >24 hours to <=48 hours after admission (19.3%), between >48 hours to <=72 hours after admission (20.03%), between >72 hours to <96 hours after admission (40.3%) and other extended periods 98.7%). This was toe sure it was representative of the time nursing records were made. The NMCAT uses 15 criteria to evaluate content of nursing documentation. They were rated as absent, present, always present, and not rated.

The independent variables in this study were receiving continuous education and nurses' socio-demographic characteristics and the dependent variables were knowledge, attitude and performance of nurses and nursing documentation. Paired sample t-tests and Repeated Measures Analysis of Variance (ANOVA) were used to analyze the data. Ethical approval to conduct the study was obtained from the University of Cyberjaya Research Ethics Review Committee (CRERC).

RESULTS

Table 1 shows the results of the NMCAT audits that were carried out on 300 nursing records before and after the intervention. It shows the percentages of the ratings for each of the criteria. The percentage rated always present for each of the 15 criteria had improved post-intervention as compared to pre-intervention. These improvements in documentation in the always present category are patient's problem written as said by patient or observed by nurse improved from 1.7% to 58 % and recording of the status whether changed or unchanged in each shift from 3% to to 61.7 % after the educational intervention. Change in the patient's status is supported by documented objective information improved to 59.7% as compared to 1.7% at baseline (pre-test). Observation, sign or symptom, is written in terms stated improved to 58.3%, from 5.7% in pre-test. The action taken by a nurse recorded improved to 50%. Response to treatment stated improved to 53%. Response to medication stated improved to 55.3%. Documenting in chronological improved to 37%. The nursing documentation Recorded and data, logical and sequential. Entries in documentation appear uniquely, and the patient is referred to by name are improved to almost 45%. Legibility of notes improved to 35.7% as compared to 24.3% at baseline (pre-test). Entries were written as incidents occurred improved to 25.7%. The education and / or psychosocial care provided by nurses is recorded in the notes improved to 34.7%.

Table 1: Comparison of audit of patient records before (pre-test) and after (Post-test)

Criterion relating to content of nursing documentation	Pre-test (Base line) before intervention (n=300), (mean= -39.97333-), SD= 15.7262, p-value<0.001				Post-test, after intervention (n=300),(mean=-14.38000-), SD= 22.3058, p-value<0.026			
	Absent no. (%)	present no. (%)	Always present no. (%)	Not rated no. (%)	Absent no. (%)	present no. (%)	Always present no. (%)	Not rated no. (%)
The patient's problem was written in terms of what the patient actually said or what was observed by the nurse	30 (10)	94 (31.3)	5 (1.7)	171(57)	0	126 (42)	174 (58)	0

There is an entry recording the status of the patient, whether changed or unchanged, on each shift	25 (8.3)	8 (32.7)	9(3)	171(57)	0	115 (38.3)	185 (61.7)	171(57)
Any change in the patient's status is supported by documented objective information.	46 (15.3)	78 (26)	5 (1.7)	171 (57)	4 (1.3)	117 (39)	179 (59.7)	0
Any observation, sign or symptom, is written in terms of what the nurse observed and is not based on the nurse's assumptions about the patient	25 (8.3)	87 (29)	17(5.7)	171 (57)	4 (1.3)	121 (40.3)	175 (58.3)	0
The action taken by a nurse when finding a change in the patient's status is recorded	52 (17.3)	66 (22)	5 (1.7)	177 (59)	0	150 (50)	150 (50)	0
The patient's response to treatment (other than medication) is stated	8 (2.7)	14 (4.7)	0	278 (92.7)	0	141 (47)	159 (53)	0
The patient's response to medication (other than treatment) is stated	8 (2.7)	19 (6.3)	0	273 (91)	0	134 (44.7)	166 (55.3)	0
The nursing documentation is a chronological report of events that describe the patient's experience from admission to discharge	99 (33)	153 (51)	48 (16)	0	0	189 (63)	111 (37)	0
All nursing entries in the patient's notes are legible	63 (21)	164 (54.7)	73 (24.3)	0	0	193 (64.3)	107 (35.7)	0
There was a recorded and date on every nursing entry in the patient's note	76 (25.3)	189 (63)	35 (11.7)	0	1 (0.3)	164 (54.7)	135 (45)	0

Entries were written as incidents occurred	237 (79)	63 (21)	0	0	15 (5)	208 (69.3)	77(25.7)	0
Entries were written in a logical and sequential manner	61 (20.3)	221 (73.7)	18 (6)	0	2 (0.7)	163 (54.3)	135 (45)	0
Entries in documentation appear uniquely	41 (13.7)	218 (72.7)	41 (13.7)	0	2 (0.7)	162 (54)	136 (45.3)	0
The education and / or psychosocial care provided by nurses is recorded in the notes	23 (7.7)	48 (16)	1 (0.3)	228 (76)	8 (2.7)	188 (62.7)	104 (34.7)	0
The patient is referred to by name in the nursing entries of the patient's notes	52 (17.3)	185(61.7)	63 (21)	0	2 (0.7)	172 (57.3)	126 (42)	0

A total of 230 questionnaires were distributed and 230 returned, giving a response rate of 100%. A very high response rate might be due to face to face personnel meeting of researcher with study respondents. Non-respondents were changed immediately since the first data collection, and inform all with the importance this study, and approval to continue until the end of the program. The demographic profile of study participants including frequencies for gender, marital status, educational level, working experience, ward worked and training on nursing documentation received is shown in Table 3. The age of the participants ranged from 18 years to 45 years with mean age ± S.D of 28.38 ±4.938, (Table 2).

Group Main Effect on Knowledge, Attitude, and Performance (KAP) of the Nurses at Baseline, Three Months and Six Months Follow Up

Results showed no statistically significant difference in mean KAP scores for control group between time from baseline to follow up {(72.1629±10.94431), (73.3187±12.68427), (73.6966±12.56907)} at baseline, three months and six months follow up respectively. However, there was statistically significant difference in mean KAP scores through intervention and control groups at baseline (72.1629 ± 10.94431) vs. (58.1068 ± 11.94407).

Otherwise there was statistically significant difference in mean KAP scores for intervention group through times from baseline to follow up {(58.1068 ±11.94407), (81.6474 ±10.77126), (88.4902 ± 7.81996)} at baseline, three months and six months follow up respectively (Table 3).

Table 2: Socio-demographic characteristics of respondents

Variable	N (%)
Age (Mean ± SD)	28.38 ±4.938
Gender	
Male	150 (65.2%)
Female	80 (34.8%)
Marital Status	
Single	119 (51.7%)
Married	106 (46.1%)
Divorced	3 (1.3%)

Widowed	2 (0.9%)
Educational	
Diploma	184 (80.0%)
Bachelor	46 (20.0%)
Experience (Mean + SD)	5.64 ± 4.423
Training	
Yes	141 (61.3%)
No	89 (38.7%)
Ward	
Cardiac Care Unite (CCU)	11 (4.8%)
Obstetrics and Gynaecology (O&G)	6 (2.6%)
Male Medical Ward (MMW)	17 (7.4%)
Female Medical Ward (FMW)	9 (3.9%)
Male Surgical Ward (MSW)	43 (18.7)
Female Surgical Ward (FSW)	21 (9.1%)
Paediatric Department	21 (9.1%)
Intensive Care Unit (ICU)	18 (7.8%)
Oncology Department	8 (3.5)
Emergency (ER)	26 (11.3%)
Other	50 (21.7%)

Table 3: Group main effect on knowledge, attitude, and Performance (KAP) of the nurses at baseline to follow up

	Group (Intervention & Control)	Mean	Std. Deviation	N
Base line Knowledge, attitude and Performance (KAP) score of the Nurses Regarding Nursing Documentation	Intervention	58.1068	11.94407	115
	Control	72.1629	10.94431	115
	Total	65.1348	13.42594	230
Three months after intervention Knowledge, Attitude and Performance (KAP) score of the Nurses Regarding Nursing Documentation	Intervention	81.6474	10.77126	115
	Control	73.3187	12.68427	115
	Total	77.4830	12.46068	230
Follow up after 6 months' after intervention Knowledge, Attitude and Performance (KAP) score of the Nurses Regarding Nursing Documentation	Intervention	88.4902	7.81996	115
	Control	73.6966	12.56907	115
	Total	81.0934	12.80781	230

Effectiveness of Intervention on Knowledge, Attitude and Performance (KAP) of the Nurses at Baseline, Three Months and Six Months Follow Up

Results of analysis conducted on the mean scores of the nurses' knowledge, attitude and performance of groups (control and intervention groups) and time (i.e baseline, three months post intervention and sex months post intervention) and interaction between groups presented on tables 6,7,8,9 and 10. The assumption of sphericity was violated.

Mauchly's test was used. The chi-square value of (135.2, $p < 0.001$), p-value <0.05 indicates the assumption of sphericity has been violated. The Epsilon value is 0.690 for Greenhouse-Geisser and 0.696 for Huynh-Feldt, both of which are < 0.75. So, Greenhouse-Geisser was used table 4 below.

Table 4: Tests of Within-Subjects Effects

Source of variance		Type III Sum of Squares	Degree of freedom	Mean Square	F	P-value	Partial η2
Score	Sphericity Assumed	32214.372	2	16107.186	156.776	.000	.407
	Greenhouse-Geisser	**32214.372**	**1.380**	**23337.362**	**156.776**	**.000**	**.407**
	Huynh-Feldt	32214.372	1.392	23140.137	156.776	.000	.407
	Lower-bound	32214.372	1.000	32214.372	156.776	.000	.407
score * Group	Sphericity Assumed	26357.727	2	13178.863	128.274	.000	.360
	Greenhouse-Geisser	26357.727	1.380	19094.577	128.274	.000	.360
	Huynh-Feldt	26357.727	1.392	18933.208	128.274	.000	.360
	Lower-bound	26357.727	1.000	26357.727	128.274	.000	.360
Error(within)	Sphericity Assumed	46849.397	456	102.740			
	Greenhouse-Geisser	46849.397	314.726	148.858			
	Huynh-Feldt	46849.397	317.409	147.600			
	Lower-bound	46849.397	228.000	205.480			
Intercept		3836915.309	1	3836915.309	22081.491	.000	.990
Group		1575.432	1	1575.432	9.067	.003	.038
Error(between)		39617.646	228	173.762			

Significant at $p < 0.05$

The estimates from Greenhouse-Geisser was used. There was a significant mean effect for group ($F = (1.380, 228) = 156.776$, $p = 0.001$, partial $\eta 2 = 0.407$. P-value < 0.001, the value of significant < 0.05, hence so we are 95% confident that there was within subjects' effect during time of the study (Base line, three months after intervention and Follow up after 6 months). So, the within subjects contrasts were also significant.

Table 5: Pairwise Comparisons of Nurses' KAP (Knowledge, Attitude and Performance) regarding nursing documentation at different levels after intervention (baseline to 6 months follow up)

(I) (time)	(J) (time)	Mean Difference (I-J)	P-value	95% Confidence Interval for Difference[b]	
				Lower Bound	Upper Bound
1	2	-12.348-*	.000	-14.511-	-10.185-
	3	-15.959-*	.000	-18.099-	-13.818-
2	1	12.348*	.000	10.185	14.511
	3	-3.610-*	.000	-4.681-	-2.540-
3	1	15.959*	.000	13.818	18.099
	2	3.610*	.000	2.540	4.681

Significant at $p < 0.05$

Pairwise comparison showed mean difference at level 1 vs. 2 (mean difference =12.348-, p <0.001), level 1 vs. 3 (mean difference = 15.959-, p <0.001), level 2 vs. 3 (mean difference = -3.610-, p <0.001). So, there were statistically significant mean at all levels (Table 5).

DISCUSSION

Nursing documentation is an important part of clinical documentation. Thorough nursing documentation is a precondition for good patient care and for efficient communication and cooperation within the healthcare professional team (Ammenwerth, Mansmann, Iller, & Eichstädter, 2003).

The independent, complex role of nurses requires accurate documentation of assessments, interventions, and outcomes. Nursing documentation is an indicator of the performance of nursing while performing nursing care that can be seen from the implementation of nursing documentation. Without nursing documentation, all of the nursing implementation done by nurses has no meaning in terms of responsibility and accountability (Dellefield, 2006).

Nursing documentation is one of the efforts required to establish and maintain accountability of nurses and nursing. Education is greatly influenced the implementation of nursing documentation. Nurses with different levels of education will have different quality of documentation, because the higher the level of education, the cognitive abilities and skills will increase as well (Jenks, 1993).

(Pape et al., 2005) stated that nurses' with continuous education more easily received information and made decision on documentation. (Rosenberg, 2005) states continuous education would increase the knowledge, performance, desire and intellectual maturity in the application of the complete documentation.

Questionnaire and NMCAT audit were used to evaluate the effectiveness of the continuous medical education module on implementation in this hospital in Sana'a city. In this study, NMCAT was used to audit nursing documentation before and after the intervention>.

A study by (Al-Sufyani, 2008) revealed a high incidence of documentation errors in the traditional handwritten prescription process. It was also reported that there was an acute shortage of nurses in most government hospitals which effected nursing services and the quality of nursing records (Al-Sufyani, 2008). This low number of nurses caused a heavy burden on documentation and affected the accuracy and completeness of the nursing records. Another study revealed error rates varied from 7.1 % to 90.5 % for prescribing and from 9.4 % to 80 % for administration. The most common types of prescribing errors reported were incorrect dose (with an incidence rate from 0.15 % to 34.8 % of prescriptions), wrong frequency and wrong strength (Alsulami, Conroy, & Choonara, 2013). Most errors occurred when prescriptions were transcribed into the patients' chart. The readability of the handwritten prescriptions was generally bad. Most studies did not assess the clinical severity of the medication errors (Alsulami et al., 2013). Both Alsulami and Al-Sufyani studies showed there were huge gaps in nursing documentation and lack of important information in nursing records which is fully consistent with this current study.

Al-Khaja et al reported the highest error rate was 90.5 % of prescriptions in a primary health care center (Al Khaja, Al Ansari, Damanhori, & Sequeira, 2007), while the lowest error rate, reported by Al-Dhawailie, was 7.1 % of prescriptions in a teaching hospital (Al-Dhawailie, 2011). The errors types were classified as wrong patient (4%), wrong drug (9%), wrong dose (12%), wrong frequency (23%), wrong strength (35%), wrong drug combination (10%), and unclear written medical orders (7%) (Al-Dhawailie, 2011). This is in concordance with our current study, applying the NMCAT audit tool before intervention, that there are major defects in the nursing documentation. Sadat-Ali and colleagues assessed the prevalence and characteristics of medical errors (MEs) in patients admitted to a teaching hospital (Ahmed et al., 2010). The authors found that the prevalence of medical errors (MEs) was low (1.58 per 1000 admission). This is likely due to the method used in the study, which was a retrospective review of incident reports notorious for underestimation of error rates (Ahmed et al., 2010). In addition, the authors revealed that most of the MEs (50 %) occurred during the night shift (Ahmed et al., 2010). This finding are consistent with our study, as it showed significant defects in documentation and significant correlation in nursing documentation pre and post intervention.

Karkkainen et al. (2005) said the quality of nursing documentation reflects the nurses view of their documentation. So, if nurses didn't believe that documentation had a useful clinical purpose, they didn't give a full picture of the care given to patients. However, if nurses saw their documentation as an important aid to communication and a guide to care, their documentation gave a fuller picture of the care given to the patient (Kärkkäinen, Bondas, & Eriksson, 2005). The NMCAT is a useful, reliable,

and valid tool that clinicians, managers and educators can use to monitor aspects of nursing documentation (Johnson, 2010).

Results in table 1 showed a significant difference between pre- and post-intervention {(pre-intervention mean score=-39.97333±15.7262, p<0.001), (post-intervention mean score=-14.38000±22.3058, p<0.026)}, p-value <0.005, So, we reject the Ho hypothesis. There is enough evidence to show that there is a significant difference between the mean scores on the quality of nursing documentation before and after training implementation. That means the continuous education intervention for nurses was effectiveness.

Moreover, from table 1 that the mean of post-intervention (-14.38000) is greater than the mean of pre-intervention (-39.97333) means there are statistically significant differences for post-intervention, and the p-value is less than 0.05. So, the intervention was effective to improve quality of nursing documentation. Through my knowledge of the previous studies conducted in Yemen which didn't mentioned to this point, and didn't used any audit for nursing documentation, So, this study is more important than all previous studies.

Respondents in the intervention group had a significant increase in knowledge, attitude and performance regarding nursing documentation from baseline to six months follow up post intervention (mean ={(58.1068, 81.6474 and 88.4902) at baseline, three months and six months follow up respectively, p = 0.001). This consistent with finding of an intervention on knowledge, attitude of nurses regarding pain management. A significant effect of pain education on total knowledge scores as well as regarding specific questions was detected. Intervention group participants provided 6.11±5.55 additional correct answers (15.66%±14.23% improvement) and they exhibited significantly improved post-test scores compared to controls (26.49±5.24 vs. 18.75±4.48 (Patiraki et al., 2006). Similarly, in (Collins, 2013) study which concluded to the continuing education can improve clinical reasoning, as shown by improved attitudes toward and accuracy of nursing diagnosis.

In control group there was no statistically significant differences in knowledge, attitude and performance during the period of study. Analysis performed revealed statistically significant difference in mean knowledge, attitude and performance between the intervention and control groups (Intervention mean =58.1068, Control mean= 72.1629) at baseline. However, there were an increase in nurses' knowledge, attitude and performance in comparison to baseline at three months post intervention, follow up in the intervention group (Table 3).

The effectiveness of intervention on knowledge, attitude and performance scores of the intervention group for time (baseline, three months post-intervention and six months post-intervention) effects including the intervention between group and time. However, the control group didn't affect.

A significant main effect was seen between intervention and control groups $F = (1, 228) = 9.067$, $p = 0.003$, partial $\eta 2 = 0.038$. This indicated that the intervention was effective in improving knowledge, attitude and performance of respondents in the intervention group compared to control group. There was also significant main effect for time ($F = (1.380, 228) = 156.776$, $p = 0.001$, partial $\eta 2 = 0.407$. A significant main effect for time indicates improvement on mean of knowledge, attitude and performance scores over time. The intervention effect of time and group was significant $F = (1.380, 228) = 128.274$, $p = 0.001$, partial $\eta 2 = 0.360$. This study agreement with the findings of study conducted by Bisallah et.al 2018 on the effect of health education in improving knowledge, attitude and practice.

In comparison with all previous studies in Yemen regarding nursing documentation, the researcher didn't find these details, which gave great importance to this study, which was carried out in Yemen compared to other studies.

Pairwise comparison performed for mean knowledge, attitude and performance scores showed a statistically significant mean difference over the following time pairs at baseline to three months post-intervention, baseline to six months follow up post-intervention and at three months post-intervention, to six months follow up post-intervention (mean difference = -12.348-, p= 0.001, mean difference = -15.959-, p= 0.001, mean difference = -3.610, p= 0.001 respectively). So, the continuous education intervention was useful which lead up to improving nursing documentation in intervention group, Al-Kuwait hospital, Sana'a, Yemen.

By reviewing all the studies registered at the National Research Center in Sana'a, Yemen which contains more than thirteen thousand titles, this study is the first study on knowledge, attitude, and performance of nurses regarding nursing documentation.

CONCLUSION

This study has shown that continuous education lead to an improvement in each of the criteria used evaluate quality of nursing documentation.

A significant improvement in the quality of nursing documentation after the continuous education module intervention had been conducted was shown in this study. The usefulness of the continuous education module in improving the quality of nursing documentation was shown be the significant differences between baseline and 3 months, between baseline and 6 months and between baseline and 6 months scores. It is recommended that nurses be continuously trained on nursing documentation so as to enhance their knowledge, attitude and performance leading to improvements in the quality of nursing documentation and care.

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