

Association between Nursing Teamwork and Missed Nursing Care by Nurses at University Teaching and Referral Hospital

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Authors' contributions

This work was carried out in collaboration among all authors. Author FN designed and implemented the study. Authors NJ and DM were supervisors and responsible for efficiency and effective implementation of the study. All authors critically and scientifically reviewed the manuscript and approved its final copy for publication. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: Nurses serve as a bridge between doctors, patients, and the hospital administration among their roles and thus effective teamwork and collaboration should be mandatory for better service delivery to patients. Focusing on identifying the link between nursing teamwork and missed nursing care will assist healthcare providers in improving the quality of services provided to patients.

Objective: This study aimed to determine the association between level of nursing teamwork and missed nursing care by nurses at the University Teaching and Referral Hospital of Kigali in Rwanda.

Material and Methods: The study was cross-sectional descriptive and correlation design conducted from November-December 2021. This study utilized the census method to obtain participants where all nurses who met inclusion criteria and consented for participation were included in the study. The researcher used Nursing Teamwork survey (NTS) and MISSCARE survey questionnaires for data collection. The data was analyzed using SPSS version 26.0.

Results: The result, $\chi^2 (4, N=201) = 44.18, p \leq 0.001$ revealed that there was statistically significant association between level of nursing teamwork and the level of missed nursing care. The majority

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(58.70%) perceive that the level of nursing teamwork was moderate. The top three elements of nursing teamwork that nurses perceived to have never occurred were during break staff rarely takes extra time (more than recommended one hour) (47.3%), the team rarely ignores the error of team member instead of having a discussion (42.8%), and if there was a plan to deal with sudden increased workload (39.3%). The level of missed nursing was perceived as moderate by 46.73% of study participants.

Discussion: The findings showed that there was a statistically significant association between nursing teamwork and level of missed nursing care. The level of nursing teamwork and missed nursing care were perceived as moderate. Further analyses showed that the increase in nursing teamwork led to reduction in level of missed nursing care activities.

Conclusions: The study found that the level of nursing teamwork and missed nursing care were perceived as moderate. There was a strong association between nursing teamwork and missed nursing care.

Recommendation: The management of the study setting should consider the improvement of the element of nursing teamwork that has been perceived as never occurring.

Keywords: Nurses teamwork; nursing teamwork; nursing team; missed nursing care.

1. INTRODUCTION

Nurses' teamwork is among the reported reasons for MNC. Missed Nursing Care is defined as any facet of standard nursing care needed by the patient is provided either partially or not provided entirely or delayed significantly [1]. Missed Nursing Care has been repeatedly reported from different settings globally that it is associated with adverse events on the patient. The study conducted in neonatal intensive care found that the MNC described by nurses on their last shift was at 36%, with a high incidence of missing medications, significantly delayed feeding, and inadequate pain treatment, resulting in altered patient comfort, morbidity, and extended hospitalization [2]. It is problematic to the optimal outcomes of the patient, family, and patient-centered care. Knowing these issues helps nurse practitioners and nurse researchers improve and advance the excellence of nursing care services within the profession. In hospitals, 28.57 percent of patients encounter MNC scenarios. In those admitted, 4% to 16% of them experience adverse effects that can be 50% preventable [3,4]. Additionally, the research from Magnet hospitals (USA), nurses was less likely to report some factors as the leading cause of missed care like a breakdown of or ineffective communication among nurses at 68%, unfamiliarity with the procedure, policy, or equipment at 64%, lacking support from team members at 51%, breakdown of communication with medical staff at 49%, and lack of assistive personnel at 47% respectively that happened on their last shift compared to non-magnet hospitals [5].

A quasi-experimental investigation conducted by Ahmed et al. [6] involved 48 nurses working in intensive medical units. The findings confirmed that Nurse's teamwork training affected MNC. The study found that an increase in nursing teamwork training resulted in decreasing MNC. In addition, the study found a negative association between nursing teamwork and MNC; however, the team orientation was positively associated with MNC. Ineffective teamwork reflects in the units when nurses are not communicating among themselves during their shifts. Kalisch described some scenarios which reflect ineffective nursing teamwork; she argued that when there is a new patient brought in the service unit and the nurse who received the patient did not report to the nurse assigned to that unit until when the patient calls for help due to intense pain [7]. This also happens when a patient with a long-standing controlled chronic illness under medication is admitted for different acute conditions. The primary nurses did not report the patient's drugs to be considered by their fellow nurses. According to Nelson [8] teamwork was inversely associated with MNC, meaning that an increase in teamwork results in a reduction of MNC. These high levels of teamwork reduced the association between workload and MNC. Research on determining whether nursing teamwork affected MNC reported an association between MNC and overall teamwork scores and the teamwork subscale significantly influenced MNC, were trust, backup, team orientation, shared mental model, and team management. The study findings concluded that an increase in nursing teamwork reduces MNC [7]. According to Mohamed & Abed [9] nursing teamwork was

perceived as high, but there was no association between overall teamwork and MNC. However, one-third of study participants reported high MNC.

In addition, the findings from different studies conducted in Egypt were congruent with other researches. They reported that missed nursing care were associated with inadequate staffing, material resources, ineffective teamwork, and communication factors [5,6]. Another similar study conducted in Tigray, northern Ethiopia, which included 422 nurses from 16 general hospitals, found at least one Missed Nursing Care at each shift and was associated with communication, labor, material resources, and teamwork factors [10,11]. A study conducted in Ethiopia, which included 422 nurses and midwives, also revealed that 74.6% of respondents missed at least one nursing care. The reasons given were material resources with 90%, teamwork with 91%, labor resources, 96.3%, and 85.3% for communication while also the level of education, nursing shifts, and nurses' intention to quit the job was associated with missed nursing (activities) care [12]. Various studies were conducted on the same concept and showed other factors that were affecting missed nursing care activities, however, there was sketchy literature found from the African context, no literature was found in Rwanda on this concept hence there was a need to study the association between nursing teamwork and missed nursing care by nurses.

2. METHODS

2.1 Study Setting and Data Collection

This research was conducted at the University Teaching and Referral Hospital of Kigali in Rwanda, also known on its French name as "Centre Hospitalier Universitaire de Kigali"(CHUK). This study adopted MISSCARE survey and Nursing Teamwork Survey (NTS) to gather the data from the sample population. The consistency and validity were examined repeatedly by Kalisch & Williams [13] and Kalisch, [14]. Therefore, the researcher utilized the tools unaltered. The MISSCARE survey was comprised of one part having 24 questions regarding MNC grouped into nine (9) areas: 1) assessment with five (5) subjects, 2) drug administration with four (4) subjects, 3) patient health education with three (3) elements 4) patient feeding with three (3) items, 5) hygiene with three elements, 6) patient mobility with two

(2) subjects, 7) responding to patient inquiries with two (2) elements 8) attending interdisciplinary meetings one (1) element and 9) documenting all necessary data with one(1) element [15]. The rating was on 5 points Likert scales as 1= never missed, 2=rarely missed, and 3 = sometimes missed, 4= frequently missed and 5= always missed [8]. Therefore 1 and 2 were regarded as nursing care never missed, three as sometimes missed, and 4,5 was considered as nursing care that is always missed [16,17].

Nurses' teamwork survey (NTS) was mainly invented to assess the perception of teamwork among nursing staff. It has 33 items which are classified into five domains: domain one Trust (7 elements), domain two: Team orientation (7 elements), the third domain: Backup (6 elements), the fourth domain: Shared mental model (7elements), and a fifth domain: Team leadership (4 elements). The responses for NTS will be (1) Never occurred 5= Always occurred. Therefore 1, and 2 will be regarded as never occurred, 3 as neutral and 4,5 will be always occurred [6,4].

2.2 Study Objectives

1. To assess the common occurring elements of nursing teamwork among nurses working at University Teaching and Referral Hospital of Kigali.
2. To determine the level of nursing teamwork by nurses working at University Teaching and Referral Hospital of Kigali.
3. To determine the relationship between the level nursing teamwork and level of Missed Nursing Care activities by nurses working at University Teaching and Referral Hospital of Kigali.

2.3 Inclusion and Exclusion Criteria

The study included nurses who were six months and above working experience in the clinical setting in the selected hospital units. Nurses providing direct care to inpatients in selected hospital units and it excluded nurses in administrative positions and nurses who were on their leave in the period of data collection. During data collection, the researcher utilized a self-report method of data collection using a self-administered MISSCARE and NTS surveys. The departments were visited in different shifts to maximize accessibility to participants; then, the researcher invited the participants and explained the study's objectives. After this explanation,

each participant signed informed consent for participation and started filling questionnaires.

2.4 Statistical Analysis

The data were analysed using SPSS version 26.0. The analysis was comprised of descriptive and inferential statistics at the significance level of (P≤0.05).

3. RESULTS

3.1 Demographic Information of the Respondents

Two hundred and one (201) nurses working in different departments at the hospital took part in this study in response to various metric variables being examined. The nurses who took part in this study work in different hospital ward departments with majority of them 39.8% working in the surgical ward, 24.9% of them work in the medical ward whereas 21.9% work in accident and emergency ward. A relatively small percentage of nurses 13.4% work in intensive care unit as it is seen in Table 1.

The level of education among respondents was assessed. 54.2% had a Diploma and 53.2% worked night shift and 46.8% of them were located in surgical ward. 42.3% had a Bachelor degree, their 50.6% worked day shift and their majority, 32.9% were located in surgical ward. 3.5% had a master's degree, their 71.4% worked

night shift and their 42.9% were located in accident and emergency Table 1. From the study, a vast majority of nurses were married accounting for 75.6%. Those who are single represent 18.9%.

In this study, female nurse respondents working at the hospital were the majority accounting to 56.7%. The percentage of male respondents who took part in this study was 46.3%. Majority of the nurses working at the hospital were aged between 31-40 years which represents 47.3%. It is followed by those aged between 21-30 years which represents 26.9%.

Among the nurses who took part in this study on average have 13 years of experience in the nursing profession and 7 years of working experience in the current unit. Table 2 presents participants characteristics and their relationship with level of missed nursing care.

3.2 Levels of Missed Nursing Care at the Hospital

At the University Teaching and Referral Hospital (CHUK) of Kigali, the level of missed nursing was perceived as moderate by 46.73% of participated nurses. 29.65% of them perceive the level of missed nursing care activities to be high whereas 23.62% perceive that there was low level of missed nursing care activities by nurses working at the hospital, further analysis on missed nursing were described by Ntezimana et al., [18]

Table 1. Distribution of participants according to education, location and their shift

Level of education	Advanced Diploma, A1		Bachelor's degree		Master's degree		Total	
	No	%	No	%	No	%	No	%
		109	54.2	85	42.3	7	3.5	201
Hospital departments	In which department nurses are located * Level of education							
	N=201							
	Advanced Diploma, A1		Bachelor's degree		Master's degree		Total	
	NO	%	NO	%	NO	%	NO	%
Medical ward	25	22.9	23	27.1	2	28.6	50	24.9
Surgical	51	46.8	28	32.9	1	14.3	80	39.8
Accident & Emergency	18	16.5	23	27.1	3	42.9	44	21.9
Intensive care unit	15	13.8	11	12.9	1	14.3	27	13.4
Total	109	100.0	85	100.0	7	100.0	201	100.0
Shifts	Shift mostly worked * Level of education							
	NO		NO		NO		NO	
	NO	%	NO	%	NO	%	NO	%
Day shift	51	46.8	42	49.4	2	28.6	95	47.3
Night shift	58	53.2	43	50.6	5	71.4	106	52.7
Total	109	100.0	85	100.0	7	100.0	201	100.0

Table 2. Participants demographic characteristics

Demographic characteristic	Level of nursing team work					
	Low		Moderate		High	
	No	%	No	%	No	%
Age						
21-30 years	3	5.9	28	54.9	20	39.2
31-40 years	2	2.4	51	60.0	32	37.6
41-50 years	1	2.1	29	60.4	18	37.5
Gender						
Male	4	5.3	47	62.7	24	32.0
Female	2	1.8	61	56.0	46	46.2
Marital status						
Married	2	1.4	78	56.1	59	42.4
Single	3	8.8	22	64.7	9	26.5
Not married (widow, divorced)	1	9.1	8	72.7	2	18.2
Education level						
Diploma, A1	2	2.0	55	55.6	42	42.4
Bachelor's degree	4	4.7	53	62.4	28	32.9
Experience in nursing profession						
0-5 years	1	4.8	12	57.1	8	38.1
5-10 years	4	6.9	33	56.9	21	36.2
>10 years	1	1.0	63	60.0	41	39.0
Experience in the current unit						
0-5 years	2	2.9	47	67.1	21	30.0
5-10 years	4	5.7	31	44.3	35	50.0
10-20 years	0	0.0	30	68.2	14	31.8

3.3 Elements of Nursing Teamwork that are Always Occurring

In this study various variables of nursing team work were examined to determine the frequency in which they occur. That is, how often certain aspects of nursing teamwork occur among the studied nurses. The goal was to determine which aspects of nursing teamwork occur most frequently. From the study, the top ten that are always occurring aspects of nursing team work are: team members recognize their task throughout the shift, 72.1%, the nurses comprehend each other's duties, 62.7%, the end of shift report contains all the needed information for continuity of patient care, 61.2%, team members understand that their commitment inspire others, 60.7%, in-charge team leader monitors the progress of the team, 60.7%, team members understand that working as a team results in quality job accomplishment, 57.7%, ideas and information is shared readily among team members, 57.2%, there is some sense of respect among team members, 53.7%, in-charge team leader balances the workload fairly among the team, 52.7% and there is clear communication among team members 48.8%, this can be seen in table 3.

3.4 Elements of Nursing Teamwork that have Never Occurred

The top five elements of nursing teamwork that the nurses perceived to have never occurred were: during break staff rarely takes extra time, 47.3%, team rarely ignores the error of team member instead of having discussion, 42.8%, there is plan to deal with sudden workload, 39.3%, oncoming staff do not complain of uncompleted work by previous shifts, 37.8% and instead of cooperating to attain entire team outcomes, teammates focus on their individual task this can be seen in Table 3.

3.5 Level of Nursing Teamwork at the Hospital

The level of nursing teamwork at the hospital was analyzed and the research findings revealed that there was moderate level of nursing teamwork at the hospital. Majority of participants perceive that the level of nursing teamwork was moderate. A very low percentage viewed that the level of nursing teamwork was low as it is represented by Fig. 1.

Table 3. Association between elements of nursing teamwork and the level of missed nursing care activities

Elements of nursing teamwork	Never occurred		Sometimes Occurred		Always Occurred		χ^2	P-Value
	No	%	No	%	No	%		
Team rarely ignores the errors of team member instead of having discussion	86	42.8	83	41.3	32	15.9	3.95	0.420
Oncoming staff do not complain of uncompleted work by previous shift	76	37.8	67	33.3	58	28.9	5.54	0.237
During break staff rarely takes extra time	95	47.3	62	30.8	44	21.9	4.89	0.299
Team welcomes criticism on area of improvement	52	25.9	57	28.4	92	45.8	2.31	0.680
Team mates with stronger personalities dominate decisions	74	36.8	72	35.8	55	27.4	1.00	0.910
When conflicts arise, most team members deal with them instead of avoiding them	66	32.8	69	34.3	66	32.8	5.98	0.201
There is frequent and non-judgmental feedback from the team	59	29.4	75	37.3	67	33.3	17.44	0.002*
Instead of cooperating to attain entire team outcome, teammates focus on their individual task	74	36.8	56	27.9	71	35.3	19.54	0.001*
Clear communication among team members	41	20.4	62	30.8	98	48.8	14.12	0.007*
Ideas and information shared readily among team members	43	21.4	43	21.4	115	57.2	27.74	0.001*
Passing information clearly as it was intended to team members	36	17.9	70	34.8	95	47.3	26.38	0.001*
Teammate seek and provide constructive feedback	48	23.9	60	29.9	93	46.3	23.84	0.001*
When staff is absent, their task are fairly distributed among the remaining members	65	32.3	46	22.9	90	44.8	10.63	0.031*
Teammates trust each other	51	25.4	69	34.3	81	40.3	8.24	0.083
Team members engage in professional development to develop themselves and adopt new methods of practice	65	32.3	56	27.9	80	39.8	25.81	0.001*
In charge team leader monitor progress of team	25	12.4	54	26.9	122	60.7	21.67	0.001*

Elements of nursing teamwork	Never occurred		Sometimes Occurred		Always Occurred		χ^2	P-Value
	No	%	No	%	No	%		
There is plan to deal with sudden workload increase	79	39.3	38	18.9	84	41.8	22.61	0.001*
In charge team leader balance, the workload fairly among team	31	15.4	64	31.8	106	52.7	6.82	0.146
In-charge/team leader provides clear and relevant directions on what is needed	52	25.9	54	26.9	95	47.3	19.45	0.001*
When teammate need support, members recognize that before being asked	57	28.4	53	26.4	91	45.3	25.83	0.001*
When team member is lagging behind in work, team members can realize it	32	15.9	85	42.3	84	41.8	17.98	0.001*
In heavy workload scenario, team members cooperate to get the work done	32	15.9	85	42.3	84	41.8	17.98	0.001*
In the team nurses monitor each other without lagging in their individual task	55	27.4	53	26.4	93	46.3	27.09	0.001*
Regardless of workload, team members attend to another patient's inquiries when colleagues are busy/overloaded	38	18.9	60	29.9	103	51.2	21.08	0.001*
In-charge team member is willing to support team members throughout the shift	43	21.4	54	26.9	104	51.7	27.74	0.001*
Team members recognize their task throughout the shift	26	12.9	30	14.9	145	72.1	17.21	0.002*
Team members understand that their commitment inspire others	27	13.4	52	25.9	122	60.7	22.39	0.001*
Team members understand that working as a team result in quality job accomplishment	45	22.4	40	19.9	116	57.7	34.26	0.001*
The end of shift reports contains all the needed information for continuity of patient care	28	13.9	50	24.9	123	61.2	41.01	0.001*
There is sense of respect among team members	40	19.9	53	26.4	108	53.7	29.31	0.001*
Team members	32	15.9	65	32.3	104	51.7	11.61	0.020*

Elements of nursing teamwork	Never occurred		Sometimes Occurred		Always Occurred		χ^2	P-Value
	No	%	No	%	No	%		
recognize strengths and weakness of their members and work with them frequently								
There is comprehension of each other duties among team members	32	15.9	43	21.4	126	62.7	15.66	0.004*

(*) statistically significant at 0.05 level of significance

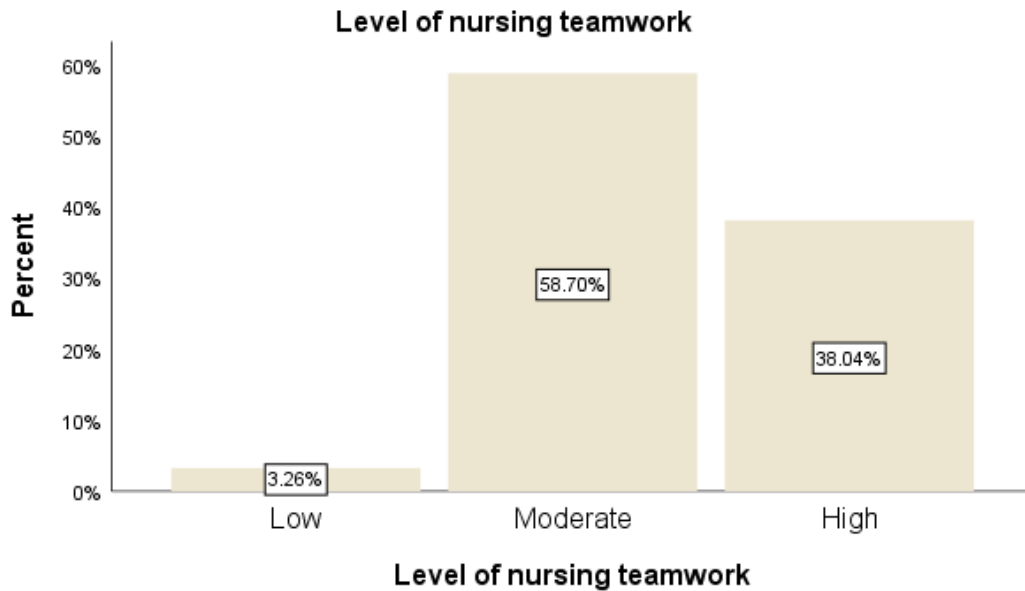


Fig. 1. Level of nursing teamwork

Table 4. Relationship between level of nursing teamwork and level of missed nursing care activities

Level of nursing teamwork * level of missed nursing care Crosstabulation				
		Level of missed nursing care		
		Low	Wloderate	High
Level of nursing teamwork	Low	0 0.0%	5 83.3%	1 16.7%
	Moderate	10 9.3%	55 50.9%	43 39.8%
	High	34 50.0%	25 36.8%	9 13.2%

3.6 Relationship between Level of Nursing Teamwork and Level of Missed Nursing Care Activities

To assess whether there was any association between nursing teamwork and missed nursing care, a Chi-square tests, and cross-tabulations were computed. The result, χ^2 (4, N=201) =

44.18, $p \leq 0.001$ revealed that the association is statistically significant. That also agreed with descriptive results in Table 4. that showed that there was a relationship between the level of nursing teamwork and level of missed nursing care activities at the hospital. From Table 4, the nurses who had high level of nursing teamwork had low level of missed nursing care activities.

83.3% of nurses who had low level of nursing teamwork and 50.9% of nurses who had moderate level of nursing teamwork had moderate level of missed nursing care activities. 50% of nurses who had high level of nursing teamwork had low level of missed nursing care activities.

Logistic regression was also computed to analyse the effects of nursing teamwork on missed nursing care, the findings revealed that nurses who are of the opinion that nursing teamwork is a factor are 1.840 times more likely to have low level of missed nursing care compared to the reference category. For every one unit increase in nursing teamwork there is 6.294 increase in the log odds for nurses to have low level of missed nursing care. Nursing teamwork is not significant factor ($p>0.05$). Nurses who are of the opinion that nursing teamwork is a factor are 0.506 times more likely to have moderate level of missed nursing care compared to the reference category. For every one unit increase in nursing teamwork there is 1.659 increase in the log. odds for nurses to have moderate level of missed nursing care.

4. DISCUSSIONS

The study findings agreed with previous study that found that the level of missed nursing care was perceived as moderate by the majority of participants [16]. The analysis also found that nursing teamwork was also perceived as moderate by the majority, however, there was no study found that classified nursing teamwork into levels. In addition, the researcher sought to find out the commonly occurring elements of nursing teamwork bot in positive and negative way as it was found in other studies [16,8,9]. The findings showed the elements that are always occurring were team members recognize their task throughout the shift, the nurses comprehend each other's duties, the end of shift report contains all the needed information for continuity of patient care, team members understand that there commitment inspire others, in-charge team leader monitors the progress of the team, team members understand that working as a team results in quality job accomplishment, ideas and information is shared readily among team members, there is some sense of respect among team members, in-charge team leader balances the workload fairly among the team, and there is clear communication among team members however, the existing literature did not explicitly detailed the distribution of elements of nursing

teamwork. These are the significant elements that play role in increase the level of teamwork among nurses which eventually positively impact the level of missed nursing care activities. However the researcher sought to find out those elements that are never occurring among the participants, the findings showed the top five elements of nursing teamwork that the nurses perceived to have never occurred were: during break staff rarely takes extra, team rarely ignores the error of team member instead of having discussion, there is plan to deal with sudden workload, oncoming staff do not complain of uncompleted work by previous shifts, and instead of cooperating to attain entire team outcomes, teammates focus on their individual task. The elements negatively affect both the level nursing teamwork and the level of missed nursing care. Furthermore, the researcher was curious to find if there was any relationship between nursing teamwork and level of missed nursing care, the results showed that there was a statistically significant between the two variables, this study findings contradicted with [9] which found no association between overall scores of nursing teamwork and missed nursing care. The nurses who had high level of nursing teamwork had low level of missed nursing care activities. Nurses who had low level of nursing teamwork and nurses who had moderate level of nursing teamwork had moderate level of missed nursing care activities while nurses who had high level of nursing teamwork had low level of missed nursing care activities this was consistent with [8]. In conclusion, logistic regression was computed for these two variables, and the results showed that there was a negative statistically significant association. The statistically increase in level of nursing teamwork resulted in the reduction level of missed nursing care.

5. CONCLUSIONS

From the findings of this study, both the level of nursing teamwork and level of missed nursing care were moderate and statistically associated. This study revealed the elements of nursing teamwork that were playing role in increasing the level of teamwork among nurses and indirectly influence missed nursing care positively. The study results also established those that were never occurring and negatively affecting both the level of nursing teamwork and level of missed nursing care. Finally, the findings showed that increasing the level of nursing teamwork, increases the odds of improving the level of missed nursing care.

6. RECOMMENDATIONS

The study recommends that the institution's administration should invest in nursing teamwork as means for mitigating missed nursing care.

DISCLAIMER

This paper is an extended version of a preprint document of the same author.

The preprint document is available in this link: <https://assets.researchsquare.com/files/rs-1545346/v1/5df6933c-2b65-45e9-bdce-82fd49633139.pdf?c=1654300055> [As per journal policy, pre-print article can be published as a journal article, provided it is not published in any other journal]

CONSENT AND ETHICAL APPROVAL

Ethical clearance was sought from Institution Ethical Review board at Mount Kenya University (MKU-IERB). The researcher submitted this copy to CHUK -ethical review committees and was given the permission to access the participants in their setting. Before initiating data collection, the researcher also sought participants' consent to ensure their autonomy, dignity, confidentiality as the participants were kept anonymous. There was no further follow-up or any other intervention for nurses who did not consent for participation.

AVAILABILITY OF DATA AND MATERIALS

The datasets used and analyzed during the current study are available from the principal or corresponding author on reasonable request through Mount Kenya University. This article is a part of the whole thesis.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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