Influence of Work Schedulling On Performance of Nurses In Regional Hospitals In Tanzania

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Abstract- There are many factors which affect nurse perfomance level. However, few studies have addressed the influence of work scheduling on nurses' performance while providing patient care. This study aimed at identifying the influence of work scheduling on performance of nurses in regional hospitals in Tanzania.   The study adopted descriptive survey research design using both quantitative and qualitative approaches. A target population of 410 from which a sample size of 387 was randomly selected through stratified random sampling method Pearson correlation, independent t- test, one-way Analysis of Variance (ANOVA), and linear regression method were employed to analyze data. The findings showed a significant correlation between nurse work scheduling with all nurses' performance factors (r=0.443, p<0.05). Compressed working, shift working and flexitime were the dominant factors affecting nurse perfomance level. It was finally concluded that the management of nurse work scheduling statistically correlated with nurse perfomance level. It was recommended that, Nurse Officers should optimize the management of nurse scheduling, in order to enhance improve nurse performance

Index Terms- work scheduling, Healthcare, job performance, organization

I. Introduction

Performance of nurses is defined as the level of effectiveness of a nurse in carrying out his or her roles and responsibilities related to direct nursing care and quality of healthcare services (Gilson, 2014).   Professional nurses performs multiple responsibilities in healthcare settings including provision of different services to clients, recording information on multiple documents and undertaking health awareness campaigns (Meyer, 2011). In the wake of stiff competition and increasing expectation from the patients, nurses' timely service delivery which is neat and in completeness manner is crucial (Ivanovic &, Collin, 2016). According to Mutingi, and Mbohwa, (2015),   registered nurses plays a pivotal role in maintaining patient safety in hospitals and other settings, maintaining adequate vigilance and performance (Legrain, Bouarab, and Lahrichi, 2015).

Essentially, nurses are involved in 24/7 operations, whereby work schedules can interfere with achieving quality in performance. As a result of chronic time pressures at work and long work hours in hospitals, nurses are less able to detach from work during their off hours. As a result, several work schedule components reduce service quality due to shift overruns, mandatory overtime or on call, or long commutes (Lu, *et al.,* 2012). Lengthening of the work duration significantly restricts hours available for sleep which is adversely linked to the increased risk of needle stick injuries and health impairments. Koning, (2014) articulates that, current scheduling practices and high work demands negatively impact nurses' performance and may be partially explained by exposure irregular work scheduling.

Thus, it is well documented that health care services should be delivered under patients convenience to avoid patient dissatisfaction. However, increased workload reported by most of the public hospitals in Tanzania means that nurses' perform much more work than is normally required of them (Allen & Delahunty 2010). As a result, concerns about nurses' service quality have led to increased interest in measuring and reporting nursing's performance (Riordan, 2013). The literature clearly indicates that standard work scheduling can improve health care workplaces by monitoring and managing nurse fatigue (e.g., shift working, overtime, and working on days off) that can affect intershift recovery and nurses' work performance (Allen & Delahunty 2010). For nurses, adequate rest and sleep during non-work hours can combat chronic fatigue, leaving nurses feeling refreshed and ready for the next shift.

II. Research Elaborations

Flexibility in work scheduling refers to a schedule other than that which is standard to the work setting (Baltes, & Matthews, 2011). It refers to work practices which allow workers to work full time hours in less than the traditional 5-day workweek by increasing daily hours worked. Various characteristics may be used to describe working hours system in depending on sources and purpose. (M'Hallah, and Alkhabbaz, 2013). Normally,

categorization of working hours is based on schedules e.g. whether the employee opts for a flexitime, compressed work schedule, shift working or different combinations of these. While each type possess a particular strength and weakness, managers might apply one of those three types in consideration of nurses' competencies, number of nurses, flexibility, equality, and skill mix in managing the schedule (Ichsan, *et al.,* 2019).

In the last centuries there has been the greatest changes in work and how work is carried mandating work-family research to be overly individual focused due to the fact that work and family are not separate but intertwined spheres of human life (Ho *et al.,* 2011).In health care organizations2. , nursing profession have been greatly affected by the changes aimed at decreasing operational costs, forcing nurses to under extended work shifts (Zodwa, & Aswegen, 2017). The possibility of conflict between work and life responsibilities has always existed as a result of dual-earner families with various obligations (Treadway, Duke, Perrewe, Breland, & Goodman, 2011).Consequently, the effects have been observed for nurses' absenteeism (Bakker, Demerouti, & Sanz-Vergel, 2014), turnover intentions (Schaufeli & Bakker, 2006), poor productivity (Gierveld & Bakker, 2005), loss of returns (Allen, Johnson, Kiburz, & Shockley, 2013) or patients' dissatisfaction (De Menezes & Kelliher, 2011).

As a result, of nurses working schedule being developed around the needs for patient care, there has been a demand for human resource policies (Ho *et al.,* 2013) necessary to adjust working hours to their personal needs (Ho *et al.,* 2013). Ojokuku, Odetayo, and Sajuyigbe, (2012) argues that, claims and concerns for greater need of flexible working policies and well-being are often made in regard to hospital settings due to complicated nature of patient care being ongoing and required around-the-clock (Naithani, 2010). Thus, it is well documented that irregular work scheduling is associated with shorter and disturbed sleep, increased fatigue, occupational injuries, poor work performance, and higher work-life interference among nurses.

Dorrian *et al.,* (2011) undertook a study to explore fatigue, work schedules, and perceptions of nursing performance for a sample of Lebanese bedside nurses. The study found that, most of the fatigue in nurses resulted from non-standard work schedules and increased temporal and job demands (Akerstedt and Kecklund, 2017; Stroup, and Yoon, 2016; Dorrian *et al.*, 2011). Based on their perceptions, nurses reported that work-related fatigue moderately affected their job performance (M = 5.56, SD = 2.49) and to a greater extent their personal and social life (M = 7.30, SD = 2.45) over the past few months.

Despite the fact that, there may be a basic schedule, nurses are also subject to overtime and call-backs whereas days off may be scattered (Mshinda, Mitchell, Weiss and Obrist, (2012). Worse still, there is a challenge of units that operate without enough nursing staff to meet the needs of multiple very ill patients (Jayanthi & Vanniarajan, 2012), Consequently, the demands of this the environment may cause nurses to forego breaks and lunch times and work overtime (Higgins, Duxbury & Lyons, 2010). As a result, nurses may feel frustrated in their attempts to provide quality care leading to fatigue, more susceptible to attention failure and errors.

In Tanzanian regional hospitals, there has been tremendous decline of nurses' performance due to unknown influence of working scheduling and performance of Nurses (Tibandebage *et*

al., 2016). From Working Families (2011) report, patients who used private health facilities registered a higher level of satisfaction at 82% higher than those who used government of Tanzania facilities (63%). Also, the customers/patient satisfaction index for certified public referral hospitals, showed lower level of customer dissatisfaction at 67% compared to 80.2% satisfaction with private health centers (Songstad, Rekdal, Massay & Blystad, 2011, Shannon*et al.,* 2014). As indicated by Adams, and Hirschfeld *(2013),* nurses who works in units with long shifts reports high rate of patients' infection, high medication errors, abuses, high rate of patients falls and injuries, poor patients record keeping and high number of patient complaints.

Reports by (Kwesigabo *et al.*, 2012; Manzi *et al.,* 2012), shows that, 73% of nurses in public hospitals in Tanzania cited pressure of work and staff shortages, patients' unrealistic expectations, effects of fatigue due to extended work hours to provide continuous, work overload and poor resource supply (Kwesigabo, *et al.,* 2012). To improve nurses' performance, studies (Kahabuka & Hinderaker, 2012; Howard, 2012) recommends the use of Flexible working scheduling as an opportunity for performance improvements. Despite the fact that, the employee normal working hours in Tanzania are 9 hours per day and 45 hours per week (Answegen, 2017; ELRA, 2004; Mmbaga, 2015) nurses work more than 12 hours in public hospitals(Songstad *et al.,*2011; Darby, *et al.,* 2014).

This study seeks to provide empirical evidence on the correlation between work scheduling and the performance of nurses in the regional hospitals in Tanzania and there contribute to the improvement in the wellness of nurses, the quality of care and the health sector in the United Republic of Tanzania.

III. METHODOLOGY

This study used explanatory research design using both quantitative and qualitative approaches. This study adopted the positivist paradigm where scientific processes were followed in hypothesizing fundamental laws then deducing the observations so as to determine the truth or falsify the said hypothesis about the relationship that work scheduling and the performance of public hospitals in Tanzania (Saunders *et al.,* 2009).The target population for this study consisted of all 28 regional hospitals in Tanzania. The unit of observation was 1375 nurses in 8 regional hospitals. Nurses were grouped into three categories namely; assistant Nursing Officers, Assistant Nursing Officers and Enrolled Nurses. Eight hospitals, which formed 30% of the total regional hospitals, were randomly selected. The following formula according to Cochran (1963) was used to determine the sample size:

$$n = \frac{Z^2 pq}{\varepsilon^2}$$

Equation 1: Sample Size Determination Formula

Where;

N_0= Sample size when the population is > 10,000

Z^2 = Standard normal deviant required at confident level of 95% which is 1.96.

p = Proportion of people influenced by performance management which is set at 0.5 each.

q = 1-p

ε= 0.5 error of margin allowed.

$$N_0 = \frac{(1.96)^2 \times 0.5(1-0.5)}{(0.05)^2} = 404$$

A ratio of proportional allocation was used to allocate the 404 respondents to each of the 8 regional hospitals in the study.

Questionnaire of nurse work scheduling were used as instrument in this study. The instrument consisted of 10 questions (5= Strongly Agree, 4= Agree, 3 = Undecided, 2= Disagree, 1= Strongly Disagree) with means ranging from 2.78 to 3.69. Authors developed the questionnaire implementation of nurse scheduling base on Job Demand –Resources JD-R model .Primary data were collected by using structured online questionnaire and semi-structured interview guide. Physical questionnaires were used in every hospital and response captured in an online survey tool to enhance data quality. The ten items were computed into a work scheduling index, WS, with a mean=3.3403, SD=0.75642, N=379. The data were analyzed using SPSS version 20. Descriptive statistics were used to examine study variables. Nurses' work performance was measured using the Nursing Performance Instrument (NPI), a newly developed scale that measures nurses' own perceptions of their physical and mental performance while providing patient care. The NPI consists of nine items on a 6-point Likert-type scale with responses ranging from strongly disagree (1) to strongly agree (6).

which ranges between 0 and 1 (Kothari, 2008) with alpha at least 0.70 or above (Hall, 2008). A work scheduling index and performance of nurses index were computed. Pearson correlation was used to test for correlation. Correlation between the independent and the dependent variables with values 0.0 to 0.2 was considered weak correlation, 0.2 to 0.4 was considered moderate correlation while values of 0.5 and above being considered strong correlation (SSRL, 2010; Kent State University Libraries, 2017).

Regression analysis was conducted to determine the significance relationship of work scheduling and nurses performance. The relationship was tested using a simple regression model of the form $Y=\beta_0+\beta_1X_1+\varepsilon$. The test of hypothesis proceeded as follows. At a significance level, $\alpha = 0.05$, the hypothesized relationship was tested, Ha1: work scheduling has a positive significant influence on performance of nurses. Conclusions and recommendations were made on the basis of the findings.

IV. RESULTS AND FINDINGS

Majority of participants were female (58.8.%), Assistant nurse officers (30.2%), graduates (50.1%), with working experience of 11-20 years 1 (33.9%), married (43.6%), and working for 8 hours and above (62.5%). The satisfaction level increased in conjunction with experienced on the compressed work week (SD= 1.308) and the presence of enough staff in every unit for job sharing (SD= 1.339). With a total number of 373 respondents, the positive relationship was represented by correlation coefficient of r=0.439, p<0.05 with the precision under consideration being p=0.000 (Table 4.18). This implies that, once the nurse workload is balanced, there is a possibility of improving service delivery and career commitment. This corroborates the findings by (De Menezes & Kelliher, 2011) who found that, among the female nurses in surveyed in Turkey, it was concluded that, heavy workload restricted nurses from developing new skills and to solve work-related problems.

It was hypothesized that work scheduling has a positive significant influence on performance of nurses in regional hospitals in Tanzania. Regression analysis was conducted to determine the significance relationship of work scheduling and nurses performance. The relationship was tested using a simple regression model of the form $Y=\beta_0+\beta_1X_1+\varepsilon$. The test of hypothesis proceeded as follows. At a significance level, $\alpha = 0.05$, the hypothesized relationship was tested, Ha1: work scheduling has a positive significant influence on performance of nurses. The model was found to be statistically significant (F (1, 375) = 91.428, p-value < 0.001). Since p-value < 0.001, hence the alternative hypothesis was accepted and concluded that, at $\alpha = 0.05$ level of significance, work scheduling has a positive significant influence on performance of nurses.

Table 4.20 presents the regression model on work scheduling and nurses performance. As presented in the Table 4.19, the coefficient of determination R square is 0.196 and R is 0.194 at 0.05 significance level. The adjusted R_2 value indicates that 19.4% of the total variation in the performance of nurses can be explained by the flexible work continuity. The adjusted R_2 value = 0.194 lies just below 0.2 and 0.4 and therefore considered moderate correlation.

Table 4.1: Model Summary for Work Scheduling and Perfomance of Nurses

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.443[a]	.196	.194	.51295

a. Predictors: (Constant), Work Scheduling
b. Dependent Variable: Performance of Nurses

The Analysis of variance (ANOVA) results as shown in Table 4.21 further confirms that the model fit is appropriate for this data since p-value is 0.000 which is less than 0.05. This implies that there is a significant positive relationship between work scheduling and nurses performance.

Table 4.2: Analysis of Variance (ANOVA) for Work Scheduling

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	24.057	1	24.057	91.428	.000[b]
	Residual	98.669	375	.263		
	Total	122.726	376			

a. Dependent Variable: Performance of Nurses
b. Predictors: (Constant), Work Scheduling

By applying the standardized coefficients, the resultant regression equation $Y=\beta_0+\beta_1X_1 +\varepsilon$ yields $Y= 0.443X1$, where Y is the performance of nurses and X_1 is work scheduling. The variable is significant with $\beta_0 = 0.443$, $t = 9.562$, p-value < 0.001 indicating that a unit improvement in work scheduling contributes an improvement in performance of nurses by 0.443 as shown in Table 4.22. This means that the work practices which allow workers to work full time hours in less than the traditional 5-day workweek by increasing daily hours worked improves the performance of nurses. This would improve nurse performance in regional hospitals in Tanzania.

Table 4.3: Work Scheduling and Perfomance of Nurses Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.701	.119		22.609	.000
	Work Scheduling	.334	.035	.443	9.562	.000

a. Dependent Variable: Performance of Nurses

The moderating effect of leadership support on the relationship between work scheduling and the performance of nurses was evaluated with six items. It was hypothesized that leadership support has positive significant moderating effect on the relationship between work scheduling and performance of nurses. The means were characteristically high above 3.3. The fact of management exhibiting a supportive leadership in work undertaking had a characteristically high mean of 3.94 – perhaps an indicator of supportive leadership in the sample. That staff are involved had a mean of 3.45 and a standard deviation of 0.937 mean a convergence in the views of the respondents.

With respect to the moderation effect of leadership support on the relationship between work scheduling and the performance of nurses, it was noted that the model without the interaction term, leadership support, was significant with F (1, 373) = 90.229, p<0.001. It was also noted that the model with the interaction term, leadership support, was also significant with F (2, 372) = 101.94, p<0.001. It is noted that Model 2 with leadership support accounted for significantly more variance than just work scheduling alone, R Square Change = 0.159, p<0.001. This indicates that there is potentially significant moderation between work scheduling and leadership support on the performance of nurses. This might imply that, any hospital which demonstrates leadership commitment, on availability, acceptability and implementation of flexible working schedule improved employee performance. Thus, without management readiness to fairly negotiate and approve flexible working schedules, the practice will never work out effectively.

Table 4.23: Model Summary for the Intervening role of Leadership Support on Work Scheduling And Perfomance of Nurses Coefficients

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.441[a]	.195	.193	.51193	.195	90.229	1	373	.000
2	.595[b]	.354	.351	.45914	.159	91.708	1	372	.000

a. Predictors: (Constant), Work Scheduling
b. Predictors: (Constant), Work Scheduling, Leadership Support

Table 4.3: Model Summary for the Intervening role of Leadership Support on work Scheduling And Perfomance of Nurses

=Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	23.647	1	23.647	90.229	.000[b]
	Residual	97.753	373	.262		
	Total	121.400	374			
2	Regression	42.979	2	21.490	101.940	.000[c]
	Residual	78.421	372	.211		
	Total	121.400	374			

a. Dependent Variable: Performance of Nurses
b. Predictors: (Constant), Work Scheduling
c. Predictors: (Constant), Work Scheduling, Leadership Support

V.   Conclusions

This paper provides strong support for the potential vested in   work scheduling practices in the healthcare setting. The conclusions from this study stem solely from the results of the data analysis. Work scheduling was measured using ten items and both items registered means ranging from 2.78 to 3.69. Descriptive statistics were used to analyze this research objective and other subsequent analysis was done. The correlation analysis also indicated that there is a positive significant relationship between work scheduling the performance of nurses presented at β_0 0.443.Work scheduling, individually (F= 90.229, n = 373) and as a joint predictor, was also a significant predictor of the performance of nurses. At the same time, leadership support had a significant moderating effect on the relationship between work scheduling and the performance of nurses at βo 0.443, (n=373). Therefore, improvement in the work scheduling arrangements is expected to make significant improvement in the performances. Factoring in the moderating role of leadership support would make further significant improvements in the performance of nurses. The variable corroborates with the findings of Shuck *et al.,* (2011), which indicated that work life balance polices influence employee engagement which indicated that family supportive corporate culture influence employee engagement.

VI.   Recommendations

The following are the recommendations derived from the study paper. Due to substantial changes in the demographic composition of the workforce both healthcare the availability of flexible work schedules should not be considered as a privilege and organizations should seek to offer wider access to them. To deal with all irregular working schedule discrepancies in regional hospitals, complex changes are required ranging from putting strategies in place for recruiting and striving to retain required nurses at facilities. The work practices which allow workers to work full time hours in less than the traditional 5-day workweek by increasing daily hours worked and improves the performance of nurses be entrenched in the regional hospitals in Tanzania. Moreover, the study recommends that, the practice of leadership that appreciates and engages employees and makes them feel that their supervisors value their contributions and care about their well-being be reinforced in the leadership structures of hospitals in Tanzania to further improve the performance of nurses. The work practices of either allowing working at home or at a central place convenient to ones' customers and improves the performance of nurses be adopted in Tanzania especially with the improvement in the transport and communication infrastructure.

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