

**ORIGINAL ARTICLE****The Effect of Job Demand-Control-Social Support Model on Nurses' Job Satisfaction in Specialized Teaching Hospitals, Ethiopia**Nebiat Negussie<sup>1</sup>, Geetinder Kaur<sup>1</sup>**ABSTRACT**

**BACKGROUND:** The job demand-control- social support model has been widely studied in western countries but has not been theoretically addressed on health workers of sub-Saharan African countries. Therefore, this study investigates the relationship between Job Demand-Control-Support Model and job satisfaction in specialized teaching hospitals in Ethiopia.

**METHOD:** A cross-sectional survey was conducted from September 2014 to May 2015 in three public specialized teaching hospitals in Ethiopia. Among 1371 nurses, 360 were selected as sample. Data was collected using Job Content Questionnaire and Job Satisfaction Survey Questionnaire. After the data was collected, it was analyzed using SPSS version 16.0 statistical software. The results were analyzed using of descriptive statistics followed by inferential statistics on the variables.

**RESULTS:** The result revealed that control variables (gender, age, educational qualification, and work experience) accounted for a significant increment explaining 2.1 percent of the variance in job satisfaction. Job demand and social support together explained 24.5 percent of job satisfaction. Job demand ( $\beta=-0.152$ ;  $p<0.01$ ) had significant but negative relationship with job satisfaction and social support ( $\beta=0.458$ ;  $p<0.01$ ) had significant and positive relationship with job satisfaction. On the other hand, job control ( $\beta=0.042$ ;  $p>0.05$ ) did not have a significant relationship with job satisfaction. Furthermore, there was no straight three- way interaction effect among job demand, job control and social support ( $\beta=0.05$ ,  $p>0.05$ ).

**CONCLUSION:** Job demand and social support are related to nurses' job satisfaction, but job control neither related to nor moderated the relationship between job demands and job satisfaction. Furthermore, there was no joint three-way interaction effect among job demand, job control and social support.

**KEY WORDS:** Job Demand, Job Control, Social Support, Nurses, Public, Hospital, Ethiopia

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**INTRODUCTION**

The concept of work stress is being recognized as one of serious occupational health hazards which reduce workers' job satisfaction and performance (1,2). In recent decades, the cost of work related stress is estimated to be \$4.5 billion each year (3). **Different kinds of job introduce different levels of work stress (4).** Many studies showed that nurses, particularly those working in hospital environment, experience high level of work-related stress associated with individual, social, environmental and organizational factors

(3,5,6,7,8). Furthermore, several previous studies found significant negative relationship between nurses' job stress and job satisfaction (9-15). Different scholars developed different job stress models, but Job demand-Control-Support Model has captured the attention of many researchers and dominated empirical research on job stress since 1980s' (13,14,16). This theory recognizes the importance of daily environmental stressors on the long-term experiences of stress (17). Job demands such as high workload and time pressures can lead

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to negative outcomes including stress. However, an individual's potential, control over his/her task and conduct during working day helps to counter the negative effects of job demands. Moreover, the ability of employees to make decisions regarding work (Job control); and social support from co-workers and supervisor in one's job also helps to reverse the negative effect of high demands. (13,17).

This Job Demand-Control-Support Model is good for nursing occupation because naturally the nursing profession poses some demands and needs and high control (18, 19). Furthermore, both the main effects and the multiplicative model were significantly associated with job satisfaction (6, 20, 21). In Ethiopia, there is little research available that explores nurses' stress in the workplace from a theoretical perspective. This indicates that the impacts of job demands, job control and social support have not been theoretically addressed in Ethiopian health care service settings. Therefore, this study investigates the relationship between job demand, job control and social support and job satisfaction in specialized teaching hospitals in Ethiopia.

## MATERIALS AND METHODS

**Study design:** The study adopted a quantitative research approach using a cross sectional survey design. It was conducted in three public specialized teaching hospitals of Ethiopia between September 2014 to May 2015.

**Sampling procedure:** The study included public specialized teaching hospitals that have more than 450 beds and 250 nurses in order to provide large responses. Based on this, the following hospitals were included in the study: Jimma University Specialized Teaching Hospital (450 beds), Tikur Anbesa Specialized Teaching Hospital (600 beds), and Ayder Specialized Teaching Hospital (500 beds). All nurses who were working in these three hospitals and fulfilled the following inclusion criteria were the target population of the study: having more than one year working experience, full-time employment, and working under direct supervision of a head nurse. Based on data obtained from human resource departments of each hospital, 601 nurses in Tikur Anbesa Specialized Teaching Hospital, 501 nurses in Jimma University Specialized Hospital, and 269

nurses in Ayder Specialized Teaching Hospital were working during data collection period.

The sample size of the study was determined by single population proportion formula, assuming 5% marginal error and 95% confidence interval. 50% proportion has been preferred due to lack of similar studies in Ethiopia. The sample size was calculated to be 384. The final sample size taken up was 360 which was calculated by using finite population number correction formula and considering 20% non-response rate. The study used proportionate systematic random sampling to select samples from the study population (Table 1). The records of nurses in each hospital were used to identify potential study participants, and by using these records, notification number sample was selected randomly.

Table 1: Sampling Procedure of Nurses working in specialized teaching Hospitals in Ethiopia, 2015.

Hospitals	Total Number of Nurses	Selected Nurses
Tikur Anbesa Specialized Teaching Hospital	601	158
Jimma University Specialized Teaching Hospital	501	132
Ayder specialized teaching Hospital	269	70
<b>Total</b>	<b>1371</b>	<b>360</b>

**Instruments and data collection:** The dependent variable for this research was job satisfaction and the independent variables were job demand, job control and social support. Two standard questionnaires were used to collect data from the respondents about job related stress and level of job satisfaction. The purpose and significance of the study were explained to all participants, and all participants were informed that the participation was completely voluntary. Then, data collectors distributed copies of the questionnaires to volunteers and asked them to seal the completed questionnaires in the enclosed envelop and return them to data collectors within 10 working days.

Job Content Questionnaire (JCQ) was used to measure Job demand-Control-Support. The questionnaire was prepared based on the Job Demand-Control-Support Model (13). Twenty-one relevant items, covering the core set of items, were selected from the full Version of JCQ. They

included: skill discretion (5 items), job decision-making authority (3 items), job demand (5 items) and social support (8 items). The questionnaires were scored on a 4 point Likert-type scale, ranging from 1= strongly disagree to 4= strongly agree. It has an acceptable Cronbach's alpha coefficient that ranged from 0.70 to 0.86 (22). The scale calculations were performed according to the JCQ User Guideline(23).

The second instrument used for data collection was Job Satisfaction Survey (JSS) developed by Spector in 1997 (24). The questionnaire has 36 items, nine facet instrument design to assess employee attitude about aspects of their jobs (25). Each facet is assessed with four items using 6s point Likert-type scales ranging from 1= disagree very much to 6= agree very much. Based on Spector (24) Job satisfaction survey has an acceptable reliability of Cronbach's coefficient ( $\alpha = 0.91$ ). For the 36-items total where possible scores range from 36 to 216, the ranges are 36 to 108 for dissatisfaction, between 108 to 144 for ambivalence, and 144 to 216 for satisfaction (24).

Data was collected by six diploma holder Nurses. Before data collection, appropriate training was given to them addressing objectives of the study and methods of data collection, and each question included in the two standardized questionnaires was discussed in detail. A strict supervision was made by the researchers during data collection. The questionnaires were reviewed by three Ph.D holders in: Public Administration, Public Health and English Language in order to ensure face validity of the instrument (clarity of instruction, absence of biased words and phrases, relevance of the items, use of standard English and formatting). The questionnaires were pre-tested on 36 nurses at St. Paulos Referral Hospital in order to measure reliability of the item. Appropriate modifications were made on the questionnaires based on the pre-test result and the reviewers' comments before the actual data collection.

**Data analysis:** After data cleaning was carried out, including checking the completeness and consistency of response and excluding incomplete questionnaires, data was entered into a database using EPI Info and analyzed through the Statistical Package for the Social Science software version 16 (SPSS 16). The result of the study was analyzed by using descriptive statistics such as

frequency distribution, percentage, mean and standard deviation, and inferential statistics including ANOVA, Spearman's correlation coefficient and Hierarchal Multiple regression. The strength of association in Spearman's correlation coefficient was interpreted based on recommendation of Andy Field (26): values between  $\pm 0.1$ - $\pm 0.29$  represent a small association,  $\pm 0.3$ -  $\pm 0.49$  medium association and greater than  $\pm 0.5$  a large association. Hierarchal Multiple regression analysis was conducted to test the direct and moderating effects among variables (13, 27). The variables were introduced into regression models in four successive steps. In the first step, demographic variables were entered into the model as control variables. In the second step, job demands and moderating variables (job control and social support) were entered into the regression model. In the third step, two-way interactions were added into the model (job demands x job control and job demands x social support). In the fourth step, three-way interactions were entered into the model to complete the analysis of job demands x job control x social support. According to Cronbach (28), Dunlap and Kemery (29) and Ibrahim (13), this technique reduces the risk of multi-collinearity because the study creates interaction terms by standardising the variables before multiplying them together. Furthermore, in terms of interaction effect, the effect reaches significance when it contributes to the relationship between predictor and criterion variables and vice versa. According to the recommendation of Aiken and West (30), the graphical plot further explains the pattern of moderating effect. The level of significance was set at 0.05.

**Ethical consideration:** Ethical clearance was obtained from the Institutional Review Board of Punjabi University, Patiala. Following the approval of the Institutional Review Board of Punjabi University, Patiala, official letter of co-operation was written to concerned bodies by the Department of Public Administration, Punjabi University, Patiala. Verbal consent was obtained from every one of the participants before the data collection. Additionally, a sealed envelope containing the questionnaires and the information leaflet was given to each participant, and individual participants were not identifiable from their responses. Furthermore, for data protection,

only the researchers and their assistants had access to the computer containing data with name of participants used for selecting samples.

### Operational definitions

**Job Stress:** a situation which will force a person to deviate from normal functioning due to the change (disrupt or enhance) in his/her psychological and or physiological condition (31).

**Job satisfaction:** A positive feeling about one's job resulting from an evaluation of its characteristics (32).

## RESULTS

Of the 360 sample nurses, data were collected from 327 nurses (response rate 90%). One-hundred-ninety (58.1%) of the participants were females. The mean age of the respondents was 27.6 years (SD = 6.56), and the average work experience was 5.97 years (SD =4.82) in nursing. Most of the respondents, 198(60.6%), currently held diploma in nursing, 127(33.8%) B.Sc. in nursing, while only two (0.6%) had M.Sc. degree in nursing (Table 2).

Table 2: Frequency and mean table on socio-demographic characteristics among nurses working in Tikur Anbesa, Jimma and Ayder specialized teaching Hospitals (N = 327).

Variable	Mean (SD)	Frequency	Percentage
<b>Age</b>	<b>27.66(6.56)</b>		
<b>Gender</b>			
Female		190	58.1
Male		137	41.9
<b>Educational Qualification</b>			
Diploma		198	60.6
BSc		127	33.8
MSc		2	0.6
<b>Years of work experience in current organization</b>	<b>5.97(4.82)</b>		

Mean job satisfactions among groups working in different hospitals were compared using ANOVA. Accordingly, nurses working in Ayder Specialized Teaching Hospital showed lower score (M=98) than did nurses working in Jimma Specialized Teaching Hospital (M=102) and Tikur Anbesa Specialized Teaching Hospital (M=106). Furthermore, nurses' job satisfaction scores range was between 98 to 106 (Table 3).

Table 4 shows the mean scores of job demand dimension (M=33.05, SD=7.30), job control (M=44.03; SD=5.00), and social support

(M=22.59;SD=3.63). Furthermore, Spearman's correlation was performed to study the size and magnitude of the relationship between the variables. Job control had small but positive and significant ( $r_s = 0.196$ ,  $p < 0.01$ ) relationship with job satisfaction. Social support also had moderate, positive and significant ( $r_s = 0.417$ ,  $p < 0.01$ ) relationship with job satisfaction. On the other hand, job demand had small and negative but significant ( $r_s = -0.205$ ,  $p < 0.01$ ) relationship with job satisfaction.

Table 3: Job satisfactions among nurses working in Tikur Abesa, Jimma and Ayder specialized teaching hospitals (N=327).

Study Sites	Total Job satisfaction mean difference	Test values F	P-values
Tikur Anbesa	106	3.56	.04
Jimma	102		
Ayder	98		

Table 4: Mean, Standard Deviation and Correlations between study Variables (N=327).

Variable	M	SD	Job demand	Job control	Social Support	Job Satisfaction
Job demand	44.03	5.00	1			
Job control	33.05	7.30	0.367**	1		
Social support	22.59	3.63	-0.186**	0.076*	1	
Job satisfaction	84.57	47.69	-0.205**	0.196**	0.417**	1

\*\* Correlation significant at the 0.01 level( 2 tailed), \* Correlation is significant at the 0.05 level (2 tailed)

Table 5 presents the results of regression analysis which tested the main and moderating effect of variables. Control variables (gender, age, educational qualification and work experience) accounted for a significant increment explaining 2.1% of the variance in job satisfaction. In the second step, job demand and social support together explain 24.5 % of job demand ( $\beta=-0.152$ ;  $p<0.01$ ) had significant but negative and social

support ( $\beta=0.458$ ;  $p<0.01$ ) had significant and positive relationship to job satisfaction. On the other hand, job control ( $\beta=0.042$ ;  $p>0.05$ ) did not have significant related to job satisfaction. Furthermore, the three way interaction result indicated that there was no significant effect among job demand, job control and social support ( $\beta=0.05$ ;  $p>0.05$ ).

Table 5: Hierarchical Multiple regression of job satisfaction on Job Demand, Job Control and Social Support (N=327).

	Standardized Coefficient $\beta$			
	Step 1	Step 2	Step 3	Step 4
Control Variables				
Gender	-0.049*	-0.071*	-0.066*	0.068*
Age	0.378	-0.062*	0.064	0.064
Educational Qualification	0.041	-0.038	-0.032	-0.031
Work experience	-0.130**	0.026**	-0.022**	-0.019**
Predictor Variables				
Job Demand		-0.152**	-0.150**	-0.164**
Job Control		0.042	0.040	0.050
Social Support		0.458**	0.453**	0.450**
Two-way interaction				
Job demand x Job Control			0.011	0.015
Job Demand x Social support			0.075**	0.078**
Three-way Interaction				
Job Demand X Job Control X Social Support				0.053
R <sup>2</sup>	0.021	0.245	0.252	0.255
$\Delta R^2$	0.021**	0.224**	0.007**	0.003**
F change	6.65**	102.05**	7.69**	3.45
Df	5,2230	3,0009	2,4007	1,6224

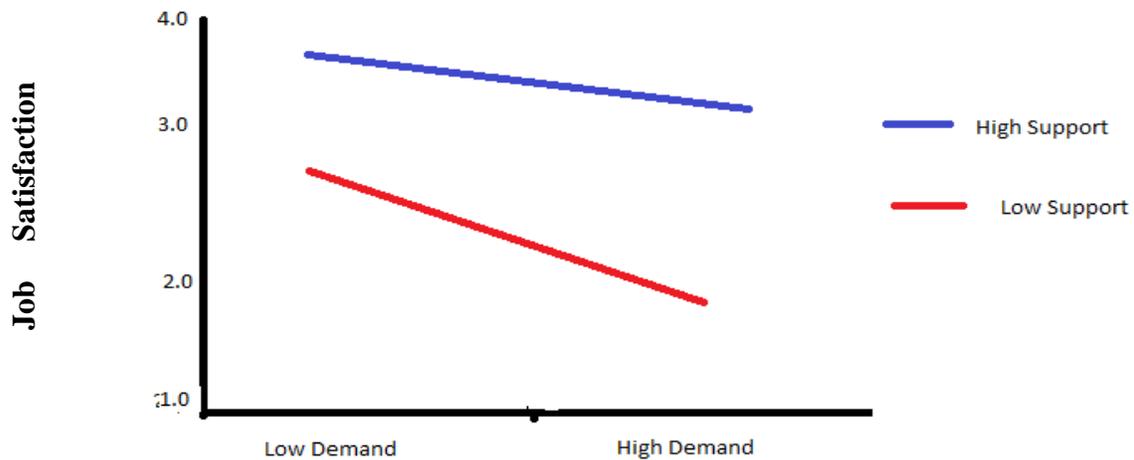
\*\*Correlation significant at the 0.01 level( 2 tailed), \* Correlation is significant at the 0.05 level (2 tailed)

Figure 1 shows the interaction between job demand and social support. There was a negative relationship between job demand and job satisfaction for nurses with both low and high social support. Relationship between job demand

and job satisfaction was highly negative for nurses with low social support compared with nurses having high social support. On the other hand, the level of job satisfaction was still higher for high support nurses as compared to low support ones.

Social support had a positive moderator effect ( $\beta=0.078$ ) on the relationship between job demand

and job satisfaction.



*Figure 1: Social support as moderator between job demand and job satisfaction*

## DISCUSSION

This study focused on the relationship between job demand-control-social support and job satisfaction in specialized teaching hospitals in Ethiopia. The mean score of nurses' job satisfaction in the three hospitals indicated that nurses scored low on job satisfaction, 36 – 108 range (24). Previous studies found lower job satisfaction in public sector health workers in both lower and higher-income countries (33, 34). Furthermore, compared to Tikur Anbesa and Jimma University specialized teaching hospitals, nurses working in Ayder Specialized Teaching Hospital showed the lowest job satisfaction. This may be due to the fact that most of the nurses working in Ayder Specialized Teaching Hospital were younger compare to those working in Tikure Anbesa and Jimma University specialized hospitals. This result has been confirmed with previous studies that younger nurses have lower levels of job satisfaction and higher intention to leave (34).

The finding of this research revealed that the mean score of job demand was higher than the scores obtained in other studies done in Iran, China and Colombia (5,35,36). This indicated higher job demand in the study population as compared to nurses from other developing countries. This may be due to shortage of staff

nurses in the hospitals. Previous research results also indicated that countries like Ethiopia where the number of health professionals is very low, inadequate nurse to patient ratios have created work pressure on nurses in their wards (37). Furthermore, the mean score of job control in the study population was significantly lower than the one found in Iranian, Chinese and Taiwanese nurses (5,35,36,38). This may be because most nurses had low nursing work experience. A similar finding was reported in a study conducted in Nigeria where years of experience were significantly associated with clinical practice and knowledge (37). Other studies also indicated that nurses with work experience of 11-20 years had good knowledge and could manage their work compared to those with work experience of  $\leq 10$  years. The reason was that nurses with more years of working experience have more chance to work with different professionals so that they can learn from their co-worker's experience (37). On the other hand, the mean score of social support dimension in the study population was not significantly different from the one identified among nurses in Iran, China, Taiwan and Colombia (5,35,36,37). Therefore, as compared to nurses from developing and developed countries, the participants of this study were an intermediate level of social support. The correlation results also

revealed that job demand, job control and social support significantly contributed to nurses' job satisfactions. Previous studies done on nurses also found that job demand, job control and social support had significant influence on job satisfaction (17,39,40).

The regression result revealed that job demand had a significant but negative effect on job satisfaction. This result is also consistent with previous researches (13,41,42). Furthermore, the result of the regression also indicated that social support had significant and positive effect on nurses' job satisfaction which is consistent with the literature on job satisfaction among nurses. Chu et, al. (43) found that support from co-workers was a significant and positive correlate with nurses' job satisfaction. Research done in the United States of America also indicated that supervisory support and work group cohesion were found to be significantly and positively related with nurses job satisfaction (44). On the other hand, job control did not have a significant effect on nurses' job satisfaction. This result concurs with previous researches done in Malaysia and China (13, 45). This may be due to the nature of collective society which prefers collective (social support) rather than personal control (13).

This study also tested job control as a moderator variable between the relationship of job demand and job satisfaction. The result indicated that job control did not moderate the negative consequences of job demand on job satisfaction. The possible reason for this result might be cultural difference between collective and individual societies (13). For instance, Bhagat, et, al. (46) revealed that job control moderated the stressor-strain relationship for countries with high scores of individualism such as the United State of America and New Zealand, but not for countries with low score of individualism like South Africa, Japan and Spain. Therefore, job demand and control model was not applicable in the collectivist culture of Ethiopian Nurses. This finding further supports another recent finding in Malaysia that showed the role of job control in moderating the job demands and job satisfaction relationship as postulated by job demand-control model developed by Karasek was not applied in the collectivist culture of Malaysian workers ( 13).

The result of the regression also revealed that social support acts as the moderator variable in the relationship between job demand and job satisfaction. Furthermore, the result indicated that nurses with high social support were protected from the negative effect of job demand and job satisfaction. This result is consistent with the findings of studies conducted by Ibrahim (13), Chay (47) and Beehr et.al.(48) which indicated that nurses benefited from working with high supportive colleagues and supervisors; their perception of experiencing high job demand were likely to increase their job satisfaction rather than their colleagues with low social support. The most likely explanation for the significant moderating effect of social support in this study is that there is a match between stressors and the support that nurses received (13, 49).

The result of the regression also showed that the three-way interaction among job demand, job control and social support was not supported by this study, similar with previous research done in Malaysian (13), Greek (41), Finland (42). Therefore, this study does not support the extension of job demand, control and job demand, control and support models. However, further research is needed to test the three-way interaction in collective societies because only a few studies tested the three-way interaction on such societies in developing countries (13).

To conclude, this study found that both job demands and social support were influenced nurses' job satisfaction. On the other hand, job control neither influenced nor moderated the relationship between job demand and job satisfaction. Contrary to job demand-control-social support model, there was no joint three-way interaction effect among job demand, job control and social support. Therefore, this research found that job demand-control-social support model was partially supported. The exception was, when examining job control as a moderate variable between the relationship of job demand and job satisfaction, and the three-way interaction of job demand, control and support. Furthermore, nurses with high social support were protected from negative effect of job demand on job satisfaction. Therefore, understanding the factors within the work environment which can affect job stress are important to help hospital nurses to remain

satisfied on their job. This study provides a first-step toward gaining an understanding of these factors on hospital nurses in sub-Saharan Africa countries. Therefore, the overall finding should contribute to further understanding of the cross-cultural aspect of job satisfaction. Thus, it is recommended that further research is undertaken to get better understanding of the contribution of job demand, control and support variables to health workers' satisfaction level. This is particularly relevant for developing countries of Sub Saharan Africa which lacks such comparative studies. (13,50). Finally, this research had two limitations. First, this study was designed to analyze specific groups (nurses) instead of a representative sample including occupational groups. The use of a specific occupational group has the advantage of avoiding the confounding effects of occupational differences, but it has the disadvantage that the results cannot be generalized to other occupations (14). Therefore, replication of these results in several different occupational groups is necessary. Second, all measurements used are self-reports, which raises questions about the common method variance. However, both main and interactive effects were assessed, and whereas the former may be due to the effects of method, the interactive relationship can not be easily attributed to method variance (14). The impact of common method variance would be that of inflating the main effect at the cost of detection of interaction effects (51). In spite of this, it would be important to use multi-method measurements. Investigators are needed which combine self-reported measurements of control and more objective measures in order to study the effects of work conditions that objectively differ in term of control (14,52).

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