

# Health Logistic Management As Perceived by Nursing Leaders and Its Relation to Their Job Satisfaction: A Comparative Study

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**Abstract:** Health logistics management can contribute greatly to hospitals outcomes, nursing leaders are playing an important role for providing ongoing leadership, accountability and satisfaction for quality care process and quality improvement efforts Aim: To compare health logistic management as perceived by nursing leaders and its relation to their job satisfaction at three health care sectors. Design: A comparative design was utilized. Setting: The study was conducted at three health care sectors which are Benha University Hospital , Teaching Hospital and Health Insurance Hospital in Al- Qalyubia Governorate. Subjects: All (146) nursing leaders (matron, supervisor and head nurse). Tools of data collection: I-Health Logistic Management Questionnaire II-Job Satisfaction Questionnaire. Results: There was a highly statistically significant differences between three study settings regarding total health logistic management and job satisfaction. Health Insurance Hospital had the highest mean scores, while Benha University Hospital had the lowest mean scores regarding total health logistics management and job satisfaction. Conclusion: There was a statistically significant positive correlation between total health logistic management scores and job satisfaction scores among nursing leaders at three studied hospitals. Recommendation: providing nursing leaders with training program about health logistics management in the three study setting and seeks challenging work assignments that allow for creativity and opportunities for nursing leaders growth and advancement.

**Keywords:** Health, Logistics Management, Nursing leaders, Job Satisfaction.

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## 1. INTRODUCTION

Effective and efficient logistic management plays a key role in health care organizations because logistic plays a key role in every economy, the supply chain partners must coordinate all activities in logistics management to ensure efficiency and job satisfaction recording and guiding the organization towards achieving its set goals (Sangeeta and Nadeem, 2018). Logistics is consisting of purchasing activities, warehousing, planning, transport, distribution and control. It is a complex function that nursing leaders flow of products and different distribution channels (Driss and Abdellah, 2016). Logistics as the specific functions that need to be carried out by each of the supply chain partners such as selecting products, forecasting demand, ordering and procuring, warehousing and storing, managing inventory, transporting from one level to the next until the commodities reach the clients and managing data in the process(Juri, 2015).

Health logistics management is a part of supply chain management that plans, implements, and controls the efficient, effective forward and reverses flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet patient requirements (Darja et al., 2014). It is a critical element of a successful relief operation focuses on the efficient management of flows of goods, information and services, to respond to the urgent needs of the affected patient under emergency conditions (Nathan and Gerald, 2012).

Health logistics management is the process of planning, implementing and controlling the efficient, cost-effective flow and storage of goods and materials, as well as related information, from the point of origin and the point of consumption for the purpose of alleviating the suffering of vulnerable Patient. The function encompasses a range of activities, including preparedness, planning procurement, transport, warehousing, and tracing, and patient clearance (Sabine, 2017). It helps to delivery of goods and products in a given place, in the right quantity, in right time, and right place and variety, as much as possible prepared personal consumption for a given level of costs. Logistics activities in hospitals provide a significant opportunity for cost containment in healthcare through the implementation of best practices (Juri<sup>(a)</sup>, 2015).

Health Logistic management has an important role for nursing leaders satisfaction. Its link to the ability to deliver the right amount of right serves, at the right place, at the right time, in the right condition with the right information. It is a very important tool for integrating the internal operations of a hospital with the supply chain processes to increase patient satisfaction. The main objectives of the logistic are to improve the overall hospital performance ,satisfaction and patient satisfaction by improving products or service delivery to patient (Amine and Gabriela, 2017).

Nursing leader's satisfaction is one indicator of the quality of health services in the hospital settings. Nursing leaders satisfaction is emotional response and behavioral expression which reflects individual evaluation of his or her own performance, working life, and working environment. Hence, job satisfaction focuses on individual's feeling toward his own job. Job satisfaction refers to a pleasant or positive emotional condition, which is derived from an employee's appreciation for his/ her occupation or work experience (Juri<sup>(b)</sup>, 2015).

According to Rastgar et al., (2018) job satisfaction can be described as the degree to which nurses like their jobs. It is a pleasurable or positive emotional state resulting from nursing leader's perception regarding important facets of their job. Also, it is an emotional response to various dimensions of job. Job satisfaction is an important concept need to be understood by all levels of management, this contributes to efficient services and high performance, and will increase organizational productivity (Gunlu et al., 2016).

According to Maslow, employees tend to satisfy their needs, in a certain order of precedence; within each level, there are needs that employees would like to be fulfilled. For instance, when physiological and security needs are satisfied, higher needs that are belonging, esteem and self-actualization become important. In other words, the assumption of this model is the only feeling satisfied to a certain level, about needs of a lower level creates a desire to implement a need on a higher level. Each employee of an institution would prefer to move to the next level after achieving the needs in the low level, then, the old need loses its importance since it is satisfied (Sypniewska, 2015).

### Significance of the study

Nursing leaders around the world in the recent years are facing many challenges as rapid development of health care services and technology. They should find new management tools to manage these changes in the health care organization internally and externally. Health logistics management can contribute greatly to hospitals outcomes. Nursing leaders are playing an important role for providing ongoing leadership and accountability for quality care process and quality improvement efforts and job satisfaction (White, Dudley, and Terhaar, 2018). Everywhere health care sectors are faced with three factors which are cost, quality, and safety. In Egypt three health care sectors (University, Teaching and Health Insurance Hospitals) are inspiring sites of changes, partnership and resources. Thus, nursing leaders have a major responsibility for designing, planning and manufacturing service delivery to patients.

### The Aim of the study

The aim of the current study was to compare health logistic management as perceived by nursing leaders and its relation to their job satisfaction at three health care sectors.

### Research Questions

1. What is the difference between nursing leaders' levels of health logistic management and their levels of job satisfaction at three health care sectors?

2. What is the relation between nursing leaders' perception about health logistic management and their job satisfaction at three health care sectors?

## 2. SUBJECTS AND METHODS

### Research Design

A comparative research design was utilized.

### Setting:

The study was conducted at three health care sectors which are Benha University Hospital , Teaching Hospital and Health Insurance Hospital in Qalyubia Governorate.

### Subjects:

Subjects included all (146) of nursing leaders who were (matron, supervisor and head nurse) and included (55) who were working at Benha University Hospital, (46) Teaching Hospital and (45) from Health Insurance Hospital.

### Tools for data collection:

In order to fulfill the aim of the study, two tools were used for data collection.

#### Tool I: Health Logistic Management Questionnaire:

It was developed by the researchers based on literature review (Mohamed, 2012 ;Fhd; 2013;Magdalena et al., 2013 and Mohamed ,2019).It was used to assess nursing leaders' perception regarding health logistic management .It was consisted of two parts:

**Part 1:** It contains demographic characteristics of nursing leaders included age, gender, marital status, position, qualifications, years of experience , years of experience in management and attaining a training program about health logistic management.

**Part 2: Health Logistic Management Questionnaire:** It contains 47 items divided into seven dimensions ; customer services (3 items), demand forecasting (3 items), communication (12 items) divided into three categories: (hospital centre (3items), department stock card (7 items), requisition for medical supplies (2 items), store(9), physical inventory (4 items), transport (9 items) divided into three categories : (transport medical supply (5 items), transport patient from department to another department(2 items),transport laboratory(2 items), medical waste product (7 items).

#### Scoring system:

Nursing leaders responses were measured on three point Likert Scale as follow: (3) for "agree", (2) for "neutral" and (1) for "disagree". Nursing leader's responses were graded according to the following scores that reflect the overall nursing leaders' perception regarding health logistics management:

- High level of perception (>75%) (>105.75 degrees)
- Moderate level of perception (60 - ≥75%) (84.6 - <105.75 degrees)
- Low level of perception (<60%) (<84.6 degrees) (Hashm, 2019).

#### Tool II: Job Satisfaction Questionnaire:

It was developed by the researchers guided by (Abd El Azeem , 2004; Maher, 2017). It was used to determine job satisfaction level among nursing leader's : It contains 49 items divided into five dimensions; physiological needs (11 items), safety and security (11 items), love and belonging (10 items), self-esteem (11 items), and self-actualization (6).

**Scoring system:** Nursing leaders responses were measured on three point Likert Scale as follow: (3) for "agree", (2) for "neutral" and (1) for "disagree". Nursing leader's responses were graded according to the following scores that reflect the overall nursing leaders' perception regarding job satisfaction:

-Satisfied ( $\geq 80\%$ ) ( $\geq 117.6$  degrees)

- Unsatisfied ( $< 80\%$ ) ( $< 117.6$  degrees) (Maher, 2017).

### **Methods**

The study was executed according to the following steps:

#### **Content validity and reliability:**

##### **Tools Validity :**

Tools of data collection were translated into Arabic and reviewed for their content validity by five experts and was selected to test the content and face validity of the instruments. The panel included five experts from nursing administration departments. Necessary modifications were done to reach the final valid version of the tool. The tools was considered valid from the experts' perspective.

##### **Tools Reliability:**

The tools were tested for reliability by the test-retest technique by 15 nursing leaders from the three hospitals who were interviewed twice at an interval of one week period and data were analyzed and compared. The reliability was assessed in a pilot study by measuring their internal consistency using Cronbach's alpha coefficient method. This turned to be ( $\alpha = 0.64$ ) for Health Logistic Management Questionnaire tool, and ( $\alpha = 0.78$ ) for Job Satisfaction Questionnaire.

##### **The Pilot Study**

It was conducted to test the clarity and applicability of the study tools and estimate the time needed for each tool. This was done on 10% of the total subjects, 15 nursing leaders (5) from Benha University Hospital and (5) from Teaching Hospital and (5) from Health Insurance Hospital who included in the present study. The time needed for filling each questionnaire related to nursing leaders was 20-30 minutes. Some items were added or refined, also necessary adjustment and modification were done and the final form was developed.

##### **Field work**

Data was collected upon two months starting from first of July 2019 until the end of Augustus 2019. It was done weekly in the morning and afternoon shifts. After gaining the acceptance from nursing leaders to participate in the study, the researcher explained the purpose and content of the questionnaire tools to nursing leaders and the tools were given and asked to fill it out and return it anonymously in the same setting or at most the next day. The researchers were available for any clarifications.

##### **Administrative and ethical considerations**

All the relevant principles of ethics in the research were followed. Before starting the shift, an official letter clarifying the purpose of the study was obtained from the faculty dean of nursing to the three hospitals directors to conduct the study and collect the necessary data. Participants' consent to participate was obtained after informing them about their rights to participate, refuse, or withdraw at any time. Total confidentiality of any obtained information was ensured. The study could not entail any harmful effects on participants.

##### **Statistical Analysis**

Data was verified prior to entry into the computer. The Statistical Package for Social Sciences (SPSS version 22.0) was used for that purpose, followed by data analysis and tabulation. Descriptive statistics were applied quantitative data (frequency and percentages). ( $\chi^2$ ) test was utilized to compare percentage between studied variable. A significant level value was rated when  $p \leq 0.05$  Arithmetic mean: as average describing the central tendency of observation. The standard deviation: as a measure of dispersion of results around the mean (for quantitative variable). Pearson correlation (r) test was used for association between total scores.

3. RESULTS

Table (1): Frequency distribution of nursing leaders regarding demographic characteristics at studied hospitals (n =146)

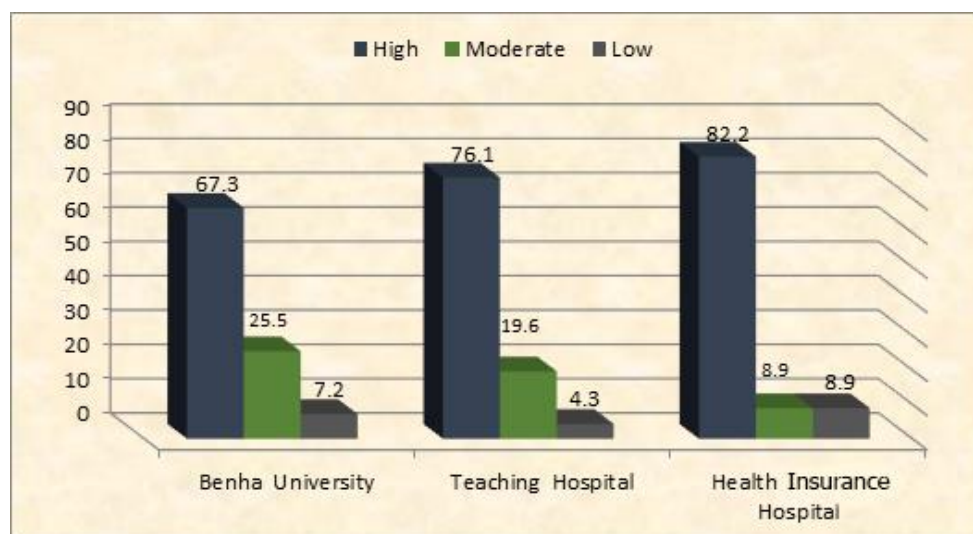
Demographic characteristics	Benha University Hospital (n=55)		Teaching Hospital (n=46)		Health Insurance Hospital (n=45)	
	No	%	No	%	No	%
<b>Age(years)</b>						
21-<30	16	29.1	9	19.6	13	28.9
30-<40	16	29.1	19	41.3	14	31.1
≥40	23	41.8	18	39.1	18	40.0
<b>Gender</b>						
Male	0	0.0	8	17.4	5	11.1
Female	55	100.0	38	82.6	40	88.9
<b>Marital Status</b>						
Single	5	9.1	8	17.4	9	20.0
Married	45	81.8	33	71.7	32	71.1
Other	5	9.1	5	10.9	4	8.9
<b>Position</b>						
Matron	2	3.6	3	6.5	4	8.9
Supervisor	3	5.5	3	6.5	7	15.6
Head nurse	50	90.9	40	87.0	34	75.6
<b>Qualifications</b>						
Technical Institute	11	20.0	14	30.4	8	17.8
Bachelor degree	38	69.1	23	50	27	60
Master degree	6	10.9	9	19.6	10	22.2
<b>Years of experience</b>						
1- <5	4	7.3	2	4.3	3	6.7
5-<10	16	29.1	16	34.8	15	33.3
10-<15	17	30.9	18	39.1	17	37.8
≥15	18	32.7	10	21.7	10	22.2
<b>Years of experience in management</b>						
1- <5	20	36.4	14	30.4	12	26.7
5-<10	12	21.8	9	19.6	12	26.7
10-<15	10	18.2	11	23.9	12	26.7
≥15	13	23.6	12	26.1	9	20.0
<b>Attending training program about health logistic management</b>						
No	55	100.0	46	100.0	45	100.0

Table (1): Shows that , more than two fifth of nursing leaders (41.8%) had age ≥40 years , the highest percent (100%) were female, more than three quarter were married (81.8) ,the majority (90.9%) of nursing leaders were head nurse and had Bachelor Degree of Nursing (69.1%) at Benha University Hospital. While, less than two fifth (39.1%) of nursing leaders had 10-<15 years of experience at Teaching Hospital. At Benha Hospital more than one third (36.4%) had 1-<5 regarding their experience years in management. All (100%) of nursing leaders did not attain any training program regard health logistic management at three studied hospitals.

**Table (2): Mean and standard division of total health logistic management and each domain as perceived by the nursing leaders at studied hospitals (n=146)**

Health logistics management domains	Benha University Hospital ( 55 )				Teaching Hospital(45 )		Health Insurance Hospital(46 )		F -test	P-Value
	Min	Max	Mean	±SD	Mean	±SD	Mean	±SD		
Customer services	3	9	4.85	2.05	4.74	1.96	6.53	1.80	12.33	.000
Demand forecasting	3	9	4.85	1.31	4.85	2.31	6.13	1.68	7.95	.001
Hospital Centre	3	9	5.89	1.53	5.43	2.38	6.53	1.91	3.64	.029
Department stock card	9	21	12.71	4.21	11.96	3.34	14.40	3.59	5.03	.008
Requisition for medical supplies	2	6	3.67	1.46	3.24	1.26	3.84	1.33	2.40	.094
<b>Total communication</b>	36	60	40.87	9.55	38.02	9.06	45.71	6.74	9.25	.000
<b>Store</b>	14	24	16.65	4.30	17.46	3.09	19.93	2.41	11.88	.000
<b>physical inventory</b>	6	11	7.44	1.47	8.67	1.351	9.29	1.44	22.14	.000
Transport medical supply	6	15	8.04	1.81	11.43	1.682	11.27	1.65	63.34	.000
Transport patient from department	2	6	3.00	1.00	4.52	1.049	4.53	.991	38.99	.000
Transport laboratory	2	6	3.42	1.69	4.37	1.540	4.64	1.59	8.068	.000
<b>Total transport</b>	24	48	25.49	5.95	36.28	4.88	36.24	4.73	71.66	.000
<b>Medical waste product</b>	11	19	11.89	2.81	13.46	2.31	14.47	2.04	14.21	.000
<b>Total health logistics management domains</b>	75	171	112.05	20.42	123.48	16.330	138.31	10.409	31.065	.000
<b>Mean% score</b>			65.5%		72.2%		80.9%			

**Table (2):** Indicates that, there was a highly statistically significant differences between three study settings regarding total health logistic management. Health Insurance Hospital had the highest mean scores (138.31±10.409), while Benha University Hospital had the lowest mean scores (112.05±20.42) regarding total health logistics management and its dimensions.



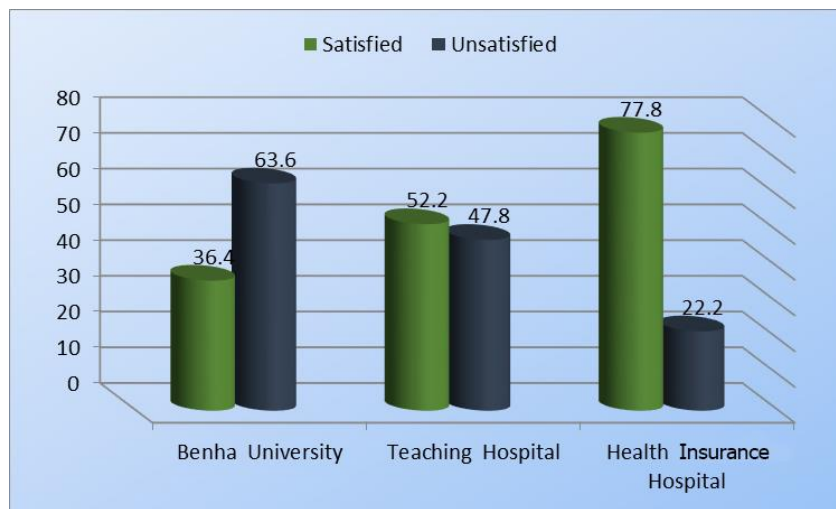
**Figure (1): Distribution of nursing leaders according to their total perception's levels of health logistic management at studied hospitals**

**Figure (1):** Showed that, the majority (82.2%) of nursing leaders at Health Insurance Hospital had the higher level of perception regarding health logistics management than Benha University and Teaching Hospital.

**Table (3):** Mean and standard division of total satisfaction and each domain as perceived by nursing leaders at studied hospitals (n=146)

Job satisfaction domains	Benha University Hospital (55 )				Teaching Hospital(45 )		Health Insurance Hospital(46 )		F -test	P- Value
	Min	Max	Mean	±SD	Mean	±SD	Mean	±SD		
Physiological needs	12	25	17.36	3.021	18.15	4.407	21.89	2.525	24.131	.000
Safety and security	13	30	20.76	3.672	22.63	5.393	24.76	3.276	11.244	.000
Love and belonging	10	23	15.49	3.564	19.59	4.920	21.11	4.018	24.716	.000
Self-esteem	13	25	17.45	2.714	19.98	4.860	22.44	2.776	24.580	.000
Self-actualization	8	18	11.55	1.864	10.87	2.857	13.07	2.406	10.207	.000
<b>Total Job satisfaction domains</b>	62	132	82.62	9.052	91.22	20.57	103.27	10.127	26.993	.000
<b>Mean% score</b>			62.6%		69.1%		78.2%			

**Table(3):** Indicates that, there was a highly statistically significant differences between three study settings regarding total job satisfaction and its domains. Health Insurance Hospital had the highest mean scores (103.27±10.127), while Benha University Hospital had the lowest mean scores (82.62±9.052) regarding total job satisfaction and its domains.



**Figure (2):** Distribution of nursing leaders according to their levels of job satisfaction

**Figure (2):** Showed that, high percent (77.8%) of nursing leaders at Health Insurance Hospital had the higher level of perception regarding job satisfaction than Benha University and Teaching Hospital.

**Table (4):** Correlation between total of health logistic management scores and total job satisfaction scores among nursing leaders at studied hospitals (n=146)

Total health logistic management scores	Total job satisfaction scores					
	Benha University Hospital (55 )		Teaching Hospital (45 )		Health assurance Hospital (46 )	
	r	p- value	r	p- value	r	p- value
	0.47	0.05*	0.42	0.04*	0.51	0.024*

**Table (4):** As evident from the table, there was a statistically significant positive correlation between total health logistic management scores and job satisfaction scores at three studied hospitals where p<0.05.

**Table (5): Correlation between health logistic management and job satisfaction domains scores among nursing leaders at studied hospitals (n=146)**

Job satisfaction domains	Health logistic management domains	Customer Services	Demand forecasting	Communication	Store	Physical Inventory	Transport laboratory	Medical waste product
physiological needs	r	.303**	.291**	.077	.084	.196*	.087	.173*
	p	.000	.000	.357	.316	.018	.295	.037
Safety and Security	r	.394**	.448**	.166*	.262**	.185*	.204*	.325**
	p	.000	.000	.045	.001	.026	.014	.000
Love and Belonging	r	.353**	.446**	.129	.135	.176*	.322**	.250**
	p	.000	.000	.120	.104	.033	.000	.002
Self-esteem	r	.263**	.446**	.254**	.408**	.399**	.429**	.492**
	p	.001	.000	.002	.000	.000	.000	.000
Self-actualization	r	.208*	.342**	.289**	.218**	.190*	.036	.242**
	p	.012	.000	.000	.008	.022	.662	.003

**Table (5):** It showed that, a highly positive statistical significance correlation between health logistic management domains and job satisfaction domains among nursing leaders, except between physiological needs and communication, store, physical inventory, transport laboratory, medical waste product domains. Also, between physical inventory and love and belonging and between self-actualization and transport laboratory, medical waste product.

#### 4. DISCUSSION

The finding of the current study indicated that, there was a highly statistically significant difference between three studied hospitals regarding total health logistic management. Also, the majority of nursing leaders at Health Insurance Hospital had higher level of perception regarding health logistics management than Benha University and Teaching Hospital. This Finding is due to Health Insurance Hospital had the highest mean scores regarding all dimensions of health logistics management, while Benha University Hospital had the lowest mean scores.

This result is supported by **Kefyalewu and Tadesse, (2018)** who reported that, poor health care waste management infrastructure and ineffective policies and procedures leading to poor medical waste product. Also, the result consisted with **Gabriel, (2012)** who reported that, poor flow of information lead to poor in communication. In addition, this result is consistent with **Driss and Abdellah, (2016)** who noticed that the costs of the procurement process and demand forecasting process due to high level of perception about this process. Also, studies about logistics in healthcare **Jørgensen et al., (2013)**; **Ferretti et al., (2014)** and **Volland et al., (2017)** revealed several focus areas in the health care logistics' studies including logistics activities (supply and procurement, inventory management, transportation, and distribution and scheduling), holistic supply chain management, lean logistics, patients' logistics, and logistics technology.

The finding of the current study indicated that there was a highly statistically significant difference between three studied hospitals regarding total job satisfaction. Also, high percent of nursing leaders at Health Insurance Hospital had the higher level of perception regarding Job satisfaction than Benha University and Teaching Hospital. This result is due to Health Insurance Hospital had the highest mean scores, while the other hospitals had the lowest mean scores regarding job satisfaction and its domains. On the same line with this study result, **Drucker-Godard et al., (2015)** result concluded that, there was no incentive for the efforts nursing managers put into their work in the company, which contributes to job dissatisfaction. In addition **Abd El Azeem, (2004)**; **Warshawsky, (2014)**; **Loveridge, (2017)** and **Warshawsky, (2018)** they reported that, nurse managers had low level of job satisfaction.

The result of the present study revealed that there was a statistically significant positive correlation between total health logistic management scores and job satisfaction scores at three studied hospitals. This result may be due to hospital logistics cover a wide range of activities which are necessary for the provision of services provided to the patient. In the



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same line this finding is supported by **Fry, (2016)** found that nursing managers are essential for the success of organizational missions and objectives. They are adept at financial management, negotiation and technologic advancements to provide quality patient care. Also, **Alivand and Ebrahimpour ,(2015)** revealed that, nursing leaders play a significant role and perform a different work such as nursing unit management, organization and strategic planning in the hospital or other health care institution .

### 5. CONCLUSION

In the light of the present study results, it was concluded that, there was a highly statistically significant differences between three studied hospitals regarding total health logistic management and job satisfaction. Health Insurance Hospital had the highest mean scores, while Benha University Hospital had the lowest mean scores regarding total health logistics management and job satisfaction. Also, there was a statistically significant positive correlation between total health logistic management scores and job satisfaction scores among nursing leaders at three studied hospitals.

### 6. RECOMMENDATIONS

On the basis of the findings that have been established the following recommendations are suggested:

- Establishing an organized way for transporting patients from one department to another.
- Providing medical supply through an organized strategy for transporting medical supplies between storage and departments.
- Developing a special system for transporting laboratory investigation of patients to lab and effective documentation during transport sample.
- Providing nursing leaders with training program about health logistics management in the three study setting.
- Seeks challenging work assignments that allow for creativity and opportunities for nursing leaders growth and advancement.

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