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OBJECTIVES

HYPOTHESIS (ES)

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

FINDINGS

RECOMMENDATIONS/SUGGESTIONS

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A STUDY ON CHALLENGES OF HANDLING NEWLY IMPLEMENTED HOSPITAL INFORMATION SYSTEM, JOB SATISFACTION AND WORK LIFE BALANCE AMONG ADMINISTRATIVE EMPLOYEES OF MULTISPECIALTY HOSPITAL

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ABSTRACT

Data was collected from 88 administrative staff of multispecialty hospital through questionnaire method and data was analysed by Structural Equation Modelling (SEM) method. Results showed that over all, respondents were satisfied with their job (3.70±.92 on 5-point rating) but 60 percent of the respondents had Work Life Imbalance and 70.5% had difficulties in handling new HIS. SEM results showed that challenge in handling new HIS had a positive impact on Work life imbalance (ß=0.562, p<0.001), whereas had no significant direct impact on job satisfaction (ß=-0.012, p>0.05) but had significant indirect effect on Job satisfaction (ß=-.359, p<0.001), where WLB had shown mediating effect between challenges in handling new HIS and Job satisfaction.

KEYWORDS
health information system, work life balance, job satisfaction and administrative employees.

1. INTRODUCTION

Hospital is a complex organisation involving activities of heterogeneous groups of employees such as doctors, nurses, paramedical and administrative staffs, all working with a common goal of providing quality medical care to the patients. There is increase in volume of patients accessing hospital services with expectations of receiving quality health care facilities[1]. To provide quality health care to the patients, management of information is crucial in hospitals, especially in multispecialty hospitals. Use of computers in hospitals found to be beneficial to cost containment and overall quality improvement in the patient care as quick availability of complete information improves the diagnosis and treatment thereby reducing the patents length of stay in hospitals. Such computerised information technology in the hospitals is Hospital Information System (HIS). HIS is used in the functional areas of the hospital such as: admissions, laboratories, radiology, pharmacy, nursing, medical records, accounts, personnel and administration. HIS automate the patient's administrative activities such as: scheduling of appointments, patient profile information, billing and the clinical care activities: such as computerised prescriptions, clinical notes, digital radiological imaging, and online laboratory results. Ultimately it has the capability of eliminating paper processes in the health delivery system. This aims at creating a resource efficient, more cost effective, informed health care service that can be utilised by all.[2] According of Sneider (1987), HIS is a hospital wide system or is a network of systems designed to help the flow of information between departments.[3] This definition highlights that HIS should work in integration with non-medical systems such as human resources, accounting and inventory besides medical systems.

Since HIS fully automate all the work it improves the work environment, there by improves the work efficiency and improves employee's morale also.[4] Some authors suggest that computerisation of hospital information system will increase job satisfaction because it frees the person from mundane clerical tasks.[5] On the other hand various studies showed that HIS implementation and adaptation is difficult task in different business areas and in hospitals is a very complicated task compared to other business areas.[6,7, 8,9,10,11,12] Some of the difficulties are: software immaturity, end user profile and resistance, support after implementation, lack of knowledge about software implementation and ignorance of administrative requirements of hospitals. Counte et al., (1987)[13] pointed out that changing from manual to computerized procedures can make radical changes in the work life Balance(WLB) of an individual. He also commented that these types of technology influence individual job functioning, particularly for those whose jobs are most impacted by the computer, the clerical/Administrative staff. Work life balance (WLB) is the degree to which an individual's effectiveness and satisfaction in work and family roles are adaptive with the individual's life priorities.[14] WLB and Job satisfaction are powerful parameters to promote individual and organizational effectiveness. It is the core of HRD's major functions, can be a powerful leverage point for promoting individual and organizational effectiveness.[15] However, because of complex workflows of hospitals, usage of HIS in healthcare brought some difficulties for the end users especially administrative staff. Hardly any studies found dealing with difficulties in handling newly implemented HIS and impact of this on job satisfaction and Work Life Balance (WLB). This study is taken up to provide a greater understanding with **OBJECTIVES** -
1. To assess the difficulties in using newly implemented HIS (challenge).
2. To evaluate work life balance/imbalance and job satisfaction
3. To measure the impact of level of difficulties in handling HIS on WLB and Job satisfaction.

2. METHODOLOGY
This study is a descriptive and cross sectional in nature and adopted to measure the extent of impact of challenges experienced by the administrative employees in handling newly implemented HIS on work life balance and job satisfaction. Data was collected from administrative employees of a Multispecialty teaching hospital in Mangaluru, Karnataka State. Administrative employees mentioned here are not health care professionals like doctors, nurses and technicians, they are

basically clerks[5] of Medical Records Department, registration counter, medical stores, general stores, billing section and department secretaries. Questionnaire (explained under measures) method of data collection was adopted and received 88 duly filled questionnaire with response rate of 73.3percent. There were three parts in the questionnaire - in the first part, had items on demographic variables, in the second part consisted of Measurement of Work Life Balance and third part involved items to measure the level of difficulty experienced in handing new HIS and level of satisfaction.

2.1 MEASURES

In order to obtain data on the chosen variables the various scales were used: the degree of WLB was measured using 5 items of Work Family Conflict (WFC) and 5 items of Family Work Conflict (FWC) using a scale developed by Netemeyer, Boles and McMurrian (1996)[16]. In this scale all the items were rated on 7 point rating scale from 1(strongly disagree) to 7(strongly agree). Higher the score measures more of imbalance or conflict. Responses of 5 items were summed and averaged to measure WFC and FWC. Respondents having mean score above 4 are considered as presence of WFC and FWC. Presence of at least WFC or FWC was considered as presence of Work Life imbalance. Items of WFC and FWC showed reliability index, cronback alpha, as 0.912 and 0.901 respectively.

The degree of job satisfaction was measured using 3 items scale developed by Cammann, et al., (1983)[17]. Items were rated on 5 point rating scale from 1(strongly disagree) to 5(strongly agree). Sample item is "All in all, I am satisfied with my job". Responses of 3 items were summed and averaged to measure job satisfaction. Cronback alpha of this scale was 0.834.

To measure the challenges in handling newly implemented HIS (Technology) single item was constructed: "I have difficulties in handling HIS", rated on 5 point rating scale from 1(strongly disagree) to 5(strongly agree). Higher the score measures higher the difficulties. Score more than 3 is inferred as difficulty present.

2.2 STATISTICAL ANALYSIS

Collected data was summarised by frequency, percentage, mean and standard deviation. Structural Equation Modelling (SEM) technique was adopted to assess the relationships and impacts among the parameters. Data was analysed using SPSS software of version 23.

3. RESULTS AND DISCUSSION

This section involves analysis, interpretation and discussion of primary data collected from the respondents and provided with five sub sections.

3.1 DEMOGRAPHIC DISTRIBUTION

Majority (54.5 percent) of administrative employees were young and belonging to the age of 20 – 25 yrs. Rest of them were almost equally distributed in the various age groups. Majority (81.4 percent) were females and 18.6 percent of them were males. Majority (75 percent) of them had below 5 yrs of experience and 11.4 percent had 5 – 10 yrs, 13.6 percent had an experience of more than 10 years of experience.

FIG. 1: DISTRIBUTION OF RESPONDENTS ACCORDING TO AGE, SEX AND EXPERIENCE
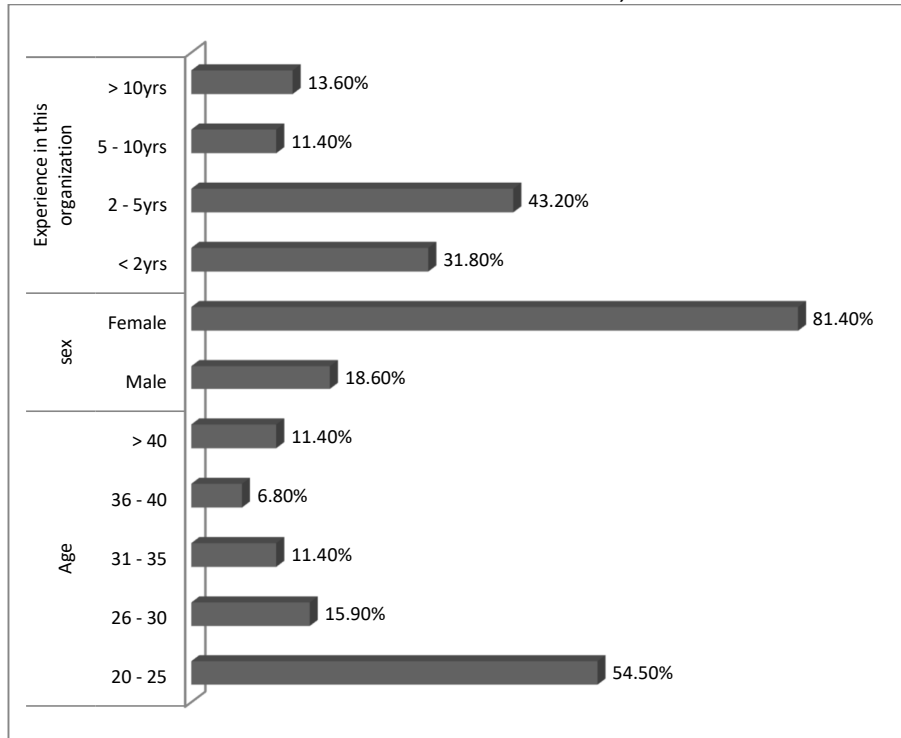
3.2 MEASURING CHALLENGES IN HANDLING NEW HIS

Analysis showed that 70.5 percent of employees had difficulties in handling newly implemented HIS. Over all on an average, level of difficulty was 3.36 (>3) with S.D= 1.16. (Table1). Even Sagiroglu, & Ozturan, (2006)[18] also found in his study that most of the end users of HIS were not happy with using different systems as integrated, because they required to learn different screens, menus and different terminologies of HIS. Large amount of end users had difficulties with workflows of HIS and even they were not satisfied with the content and mythology of training. Our study also observed that employees had difficulties in handling with newly implemented HIS in the routine work of the hospital.

TABLE 1: DISTRIBUTION OF RESPONDENTS WITH AND WITHOUT DIFFICULTIES IN HANDLING NEW HIS

Difficulties		Prevalence		Assessment
		No. of respondents	Percent	Mean ± S.D
	Absent	26	29.5	3.36±1.16
	Present	62	70.5	
	Total	88	100.0	

3.3 MEASURING WORK LIFE BALANCE (WLB)

As explained under section 2.1, WLB was measured using scale developed by Netemeyer, Boles and McMurrian (1996)[16]. 5 items of WFC was summed and averaged, if this score > 4 then considered as respondent has WFC. Similarly, FWC was also obtained. Table 2 shows the presence of WFC, FWC and both WFC and FWC. It is interesting to know that 38.6 percent of the employees had Work Family Conflict and 15.9 percent had both Work Family Conflict and Family Work

Conflict, none of them had FWC alone. Over all, more than 50 percent of the employees had Work Life imbalance. So prevalence of Work Life imbalance more than 50% and which is mainly because of influence of work on the family domain. So among hospital administrative employees spill over of work on family domain has been observed and work in the organisation was not affected by their family issues. This result is agreeing with many other studies done by other authors in this area. Studies on consequences of Work Family Conflict (WFC) showed that negative influence in the family domain results in lower life satisfaction and greater inter role conflict of the employees and also it results in psychological distress and wellbeing of employees.[14,16,19, 20] Organizations must ensure that there is a work life balance to their employees, which will pave the way for better performance, improved morale and results in higher job satisfaction, which will ultimately help to improve the organization's performance and profitability in the health care sector

TABLE 2: DISTRIBUTION OF RESPONDENTS WITH WORK LIFE BALANCE AND CONFLICT

	No. of respondents	Percent
Balance	40	45.5
WFC	34	38.6
FWC	0	0
WFC & FWC	14	15.9
Total	88	100.0

3.4 MEASURING JOB SATISFACTION

Job satisfaction was measured by 3 items devised by Cammann, et al., (1983)[17]. Responses of these 3 items were averaged and overall score was obtained. For this overall score mean and S.D was calculated to assess the job satisfaction Analysis of job satisfaction scale showed that administrative employees are satisfied with their job with mean score 3.70 (>3) and standard deviation 0.92.

TABLE 3: ASSESSMENT OF JOB SATISFACTION

	N	Minimum	Maximum	Mean	Std. Deviation
Job satisfaction	88	1.00	5.00	3.70	.92

3.5 TO MEASURE THE IMPACT OF LEVEL OF DIFFICULTIES IN HANDLING HIS ON WLB AND JOB SATISFACTION

To measure the impact of difficulties in handling HIS (Technology) on WLB and Job Satisfaction Structural Equation Modelling by Maximum likelihood method was adopted. In SEM method ensuring the model fit is very important. According to Hair et al.,(1998)[21] and Schumacker and Lomax, (2004)[22], specific indices appropriate are chi square/d.f, GFI, AGFI, RMSEA, NFI and CFI and were represented in the Table 4. Model fit indicators exhibited a good fit, as chi square/d.f <2, AGFI, GFI, CFI and NFI are greater than 0.9, RMSEA is less than 1 (Hair et al.: 1998), between the data and conceptualized model. (Fig. 2).

SEM results (table 5 and fig 2) showed that difficulties in handling newly implemented HIS has positive significant (p<0.001) impact on WLB with β=0.57, p<0.001 and there was 32percent (R^2=0.32) influence on WLB. Administrative employees, those who have experienced increased level of difficulties in handling HIS have exhibited increased level of Work Life imbalance.

Impact of difficulties in handling newly implemented HIS on Job satisfaction was β=-0.011, p>0.05, shows difficulties in handling newly implemented HIS has no significant direct impact on job satisfaction. But has significant indirect negative effect on job satisfaction with β=-.359, p<0.001(Table 6). From the path analysis (fig 2 and table 6) it is clear that those who had difficulties in handling newly implemented HIS, had shown significant lower job satisfaction indirectly through Work Life imbalance. This proves that WLB mediates the impact of difficulties in handling newly implemented HIS (technology) on Job satisfaction. Influence of direct effect of Work Life imbalance and indirect effect of level of difficulties in handling newly implemented HIS was 41percent (R^2 = 0.41). These observations are very much consistent with various other studies.

Studies have shown that employees of the hospital are affected by workforce changes due to high rate of competition and technological advancement in the industry. Changes in the work culture, work style, work demands, and family needs have an adverse influence on employees' work-life balance and job satisfaction.[23,24,25] Improvement in the Quality of work life balance influence positively on employees job satisfaction.[26,27] Higher Job Satisfaction leads to better performance, healthy lifestyle behaviour, subjective well being, occupational commitment and lesser the Turnover Intention.[28,29,30,31,32]

The HIS provides the required information to each level of the management at the right time, in the right form, and in the right place, so that the decisions to be made effectively and efficiently. The HIS plays a vital role in planning, initiating, organizing, and controlling the operations of the systems of the hospital and thus provides a synergistic organization in the process. It improves patient care by accessing data and making recommendations for care and enables a hospital to move from retrospective to a concurrent review quality and appropriateness of care.[33] But employees find it difficult to access and use immediately after implementation, because of many barriers - rejection of new technology by the users, lack of involvement and participation of users during the design and implementation of the system, integration with healthcare workflow, and important one is non-trained users.[34] As Goldstein and Gilliam, (1990)[35] pointed out Training is one of effective strategy to give the new knowledge and skill to employee to do a job effectively. So hospital must provide regular training programs to educate people on how to use the system, plus address attitudes and build enthusiasm for doing so. Appropriate techniques, training and high-quality training materials are required for successful system implementation and usage.[34, 36]

TABLE 4: FIT INDICES OF STRUCTURAL MODELS

Fit Indicators	value
Chi square/d.f	.68/1=.68, p=.406, NS
GFI	.996
AGFI	.960
RMSEA	.001
NFI	.992
CFI	.988

TABLE 5: SEM RESULTS- PATH ANALYSIS WITH STANDARDIZED BETA VALUE

PATH			Standardized beta	p value
Job satisfaction	<---	Work Life imbalance	-0.633	p<0.001**
FWC	<---	Work Life imbalance	0.758	p<0.001**
WFC	<---	Work life imbalance	0.768	p<0.001**
Work Life imbalance	<---	I have difficulties in handling HIS	0.562	0.001**
Job satisfaction	<---	I have difficulties in handling HIS	-0.011	0.932

** Highly significant *sig

TABLE 6: DIRECT AND INDIRECT EFFECTS

Direct Effects	Job satisfaction	Work life imbalance
Work life imbalance	-0.733	0.000
Difficulty in handling new HIS	-0.015	0.613
Indirect effects		
Work life imbalance	0.000	0.000
Difficulty in handling new HIS	-0.359	0.000

FIG 2: SHOWING PATH DIAGRAM OF IMPACT OF DIFFICULTIES IN HANDLING HIS ON WLB AND JOB SATISFACTION
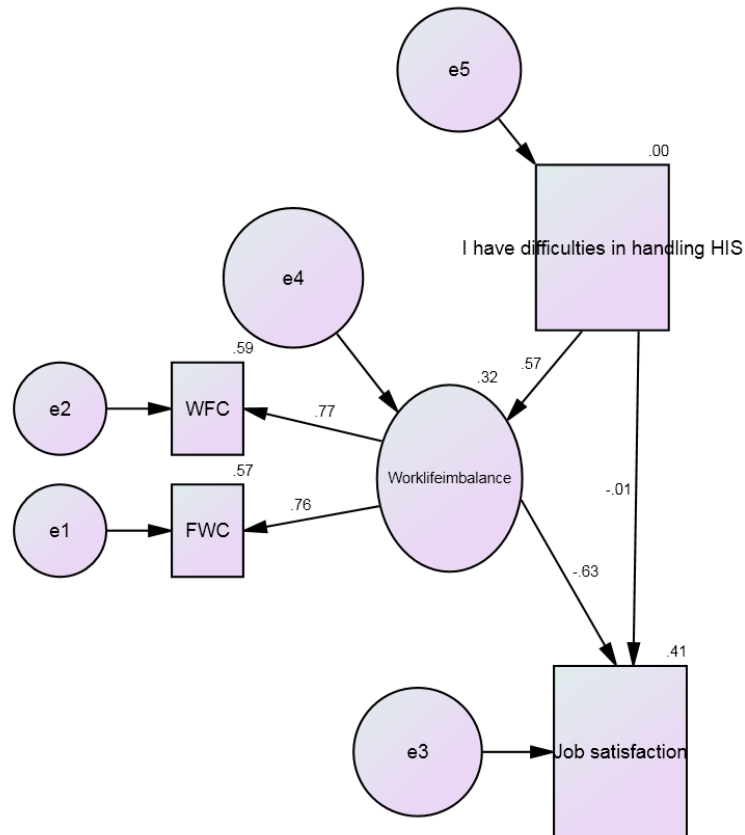
4. CONCLUSION

In India due to the privatization in healthcare sector, hospitals are facing great competition. They are confronted with different variety of challenges posed by the business environment internally and externally. Hospital administrative employees are also affected by workforce changes due to high rate of competition in the sector and technological advancement. Changes in the work style, work culture, work demands and family needs, have an inverse influence on employees' work-life balance, and job satisfaction.[25,37,38] Present study showed that challenges in handling newly implemented HIS has negative impact on Work Life Balance among administrative employees of the health care industry. Also WLB has shown mediating effect between job satisfaction and newly implemented technology. Regular training need to be provided to the employees to overcome the difficulties so that it will improve their performance and patients will get quality care from the hospitals.

5. LIMITATIONS OF THE STUDY

Only administrative staffs of the hospital where HIS implemented were included in the study, not all the end users of HIS like nurses and doctors. Similar studies can be carried out on nurses and doctors also as they also are end users of HIS.

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