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RESEARCH ARTICLE

PATIENT AND FAMILY SATISFACTION WITH INTENSIVE CARE IN A MEGA UNIVERSITY HOSPITAL: AN EXPLORATORY STUDY

Hanaa Abdullah AbuZina[1], Yasmine Toson Toman[1], Abdel-Karim Gamal El Din Kamel[2], Hend Samy Ibrahim[1], Ahmed Abdel Hamid Taha[3]*

1. Public Health and Community Medicine, Faculty of Medicine, Cairo University, Egypt
2. New Kasr Al Ainy Hospital, Faculty of Medicine, Cairo University, Egypt
3. Cairo University Hospitals, Faculty of Medicine, Cairo University, Egypt

Correspondence: yasmine.toson@kasralainy.edu.eg

ABSTRACT

BACKGROUND:

Being admitted to the intensive care unit (ICU) is stressful for both patients and families, in addition to being very costly. Therefore, the ICU was chosen for the conduct of the study in this university hospital, the New Kasr Al-Ainy Hospital (NKHICU), Egypt. This was the first such study for this facility.

OBJECTIVE:

Identify NKHICU patient and family satisfaction in order to prioritize opportunities for quality improvement.

METHODS:

This was health-system research involving exploratory design. Work began by providing training for selected NKHICU administrative staff to help with data collection activities. Next, a well-prepared checklist was used to observe some quality dimensions. Finally, satisfaction was identified using two ICU-designed interview questionnaires for patients and family members who matched the study eligibility criteria. Quantitative and qualitative findings were analyzed independently and combined in the discussion. The mean percentage satisfaction scores of the participants were calculated. The reliability of questionnaires was measured using Cronbach's Alpha.

RESULTS:

The observation revealed 'excellent' results, except for some inconvenient conditions in the family waiting areas. The highest mean percentage score of patient and family satisfaction was for the neat appearance of NKHICU staff (96.4%, and 97.1%, respectively) and the continuous availability of nurses to respond to patient needs (94.7%, and 94.3%, respectively). The least mean percentage score of patient and family satisfaction was for the shortage of required drugs/supplies (51.5%, and 40.7%, respectively). The top suggestions raised by the participants were for increasing the availability of medications/supplies and the reduction in hospital bills.

CONCLUSION:

The provision of adequate drugs/supplies, reduction in bills, and addressing patients' and families' concerns will improve their satisfaction with services.

KEYWORDS

ICU, Egypt, family satisfaction, quality improvement.

INTRODUCTION

Healthcare is primarily concerned with patient care and satisfaction without compromising costs and profits. Moreover, as with any other organization, healthcare facilities cannot survive if they cannot maintain quality services for patients and families. Organizations spend extensive resources in a never-ending quest for improvement [1]. This underpins the importance of identifying the feedback of the patients and their families, which is then translated into quality improvement projects [2, 3].

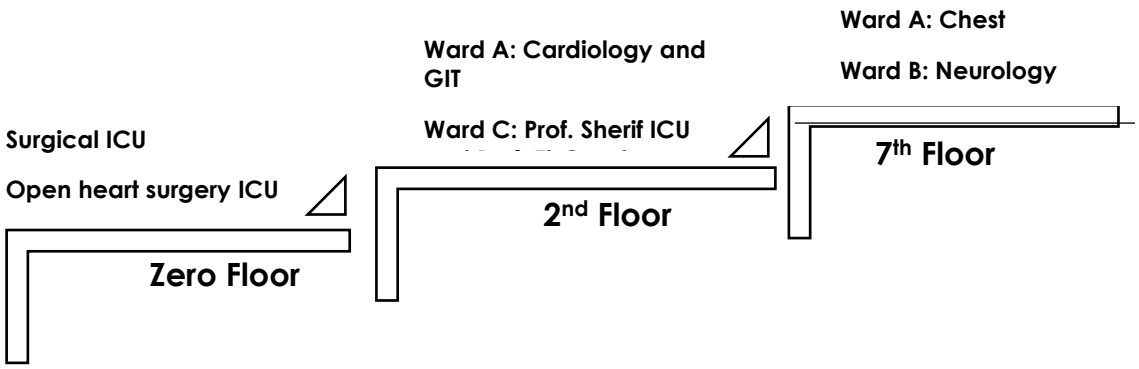
Egyptian healthcare facilities, especially the top-level ones such as ICUs, carry the burden of introducing considerable measures to ensure quality performance and competitiveness. Additionally, having a patient in the ICU is stressful for both patients and their families [4], besides being very costly [5].

Satisfaction can be defined as clients' feelings and perceptions of provided healthcare services [6]. Nevertheless, other authors defined satisfaction as a degree of similarity between clients' expectations of best care and perceptions of received care [7].

METHODS

Study design: This was health-system researchusing a exploratory design method.[**8**]

FIGURE (1): DISTRIBUTION OF NKHICU AT THE TIME OF DATA COLLECTION



STUDY SETTING

The study was performed in the New Kasr Al-Ainy Hospital ICU (NKHICU) (the hospital provides a total of X 1200 beds across the hospital). It is a university hospital affiliated with Cairo University. University hospitals are teaching hospitals managed by the Ministry of Higher Education and Scientific Research. This hospital provides quality tertiary medical care (paid non-investment). It has eight multispecialty ICUs (providing 78 beds) distributed along three floors as shown in Figure (1).

STUDY PARTICIPANTS

Thirty NKHICU patients - conforming to the inclusion criteria- participated in the study. Ross emphasized that including 30 individuals in patient satisfaction surveys will provide sufficient data [8]. Inclusion criteria for study participants were for patienst with a length of stay not less than two days in the NKHICU; fair consciousness level; and willingness to participate in the research. Thirty "next-of-kin" family members were also included, who are persons closest to the patient. Only one family member per patient could participate. So, there were 60 participants in the total number. A convenience sampling method was used.

THE STUDY INSTRUMENTS

Data in this study was collected using an observation checklist and patient and family members questionaires.

A checklist for structured observations was prepared. It was based on previous related research studies [4, 9, 10]. The checklist included sections related to the general characteristics of the NKHICU, the physical environment around the beds, the interaction between the study patients/family members and NKHICU staff, the characteristics of the waiting area allocated for families, and the services provided for them.

Additionally, two structured interview satisfaction questionnaires were prepared for patients and families. The questionnaires were adapted from previous research studies, especially the Critical Care Family Satisfaction Survey (CCFSS) [9] and the FS-ICU [11] and translated into colloquial Arabic language to avoid miscomprehension by participants of different educational levels [12]. It was translated back into English to gather the survey results.

The subsections of the questionnaires included one for sociodemographic data, another for measuring satisfaction regarding some quality dimensions [using a Likert scale ranging from 5 (very satisfied) to 1 (very dissatisfied)], and a third for suggestions for improvement of NKHICU services.

Quality dimensions listed in the patient questionnaire included the following subscales: comfort (physical environment and appearance of the staff), support and courteousness of staff, assurance, and response to needs, the privacy of patients, and overall satisfaction with the quality of services.

The family satisfaction questionnaire included questions about the comfort of the waiting area in addition to those in the patient questionnaire.

RELIABILITY OF THE QUESTIONNAIRES:

Cronbach's Alpha Coefficient was used to measure the internal consistency of the questionnaires. It was calculated by SPSS (Statistical Package for Social Studies) version 21 (IBM Inc., Chicago, IL). The total alpha coefficient was 0.90 for the whole scale of the patient questionnaire and 0.71, 0.97, 0.79, and 0.93 for the comfort, support, assurance, and privacy subscales, respectively. It was 0.69 for the whole scale of the family questionnaire and 0.61, 0.81, 0.87, and 0.98 for the comfort, waiting area, assurance, and privacy subscales, respectively. A sample size of 30 can be used to measure reliability using Cronbach's alpha [13].

DATA COLLECTION AND STUDY PHASES

The work began by preparing the observation checklist. Pilot testing of the checklist was undertaken. No modifications were needed, and it was deemed simple and handy for its purpose.

Next, a training session on observation techniques was provided to two personnel working for the NKH public relations department. The session was conducted by two researchers, and a PowerPoint presentation was used in an interactive learning session.

To ensure objectivity and avoid observational bias, the NKHICU was observed by three independent observers at different times of the day and on different days of the week for two weeks. The observation was done by two researchers and two trainees. Each observer took at least 15 minutes of observation per unit.

Determining the satisfaction levels of the patients and family members began by developing the questionnaires. They were pre-tested on five patients and five family members (included in the total number). The aim was to identify any ambiguous questions or any difficulties in understanding the questionnaires. They were deemed suitable and did not need modifications.

Next, two researchers provided training to two administrative personnel in NKH on how to use the interview questionnaire in data collection. The researchers used a PowerPoint presentation and an interactive learning session.

Data collection using the interview questionnaires: It lasted about ± 2 days/week. It took about 20 to 30 min to finish the interview questionnaire. Interviewees' responses were recorded using field notes. To ensure accuracy, the notes were recorded during and immediately after the interview [14].

The objectives of the study were explained to all the study participants before data collection and oral informed consent was obtained from all.

STRENGTHS OF THE STUDY

- It's the first study to measure patient and family satisfaction in the NKHICU.
- The stakeholders of the NKH were involved in the study from the start.
- Used more than one tool - yet simple and well prepared (triangulation of data).
- Among the data collectors were several workers in the NKH who received training from the researchers. This facilitated timely data collection, provided a chance to develop workers from the NKH, and improved teamwork, creativity, and organizational communication.

ETHICAL CONSIDERATIONS

This study was conducted according to the World Medical Association Declaration of Helsinki [15]. The Research Ethics Committee (REC) in the Faculty of Medicine, Cairo University, approved this study(Approval number: N-54-2020). The corresponding author obtained written approval from hospitals' administrative authorities and explained the study's purpose to all participants. Informed consent was obtained from all the participants before the study, and voluntary participation was ensured. Confidentiality of data was guaranteed (questionnaires were anonymous). All the data was used for scientific purposes only.

DATA ANALYSIS

Data were coded, entered, and statistically analyzed by Microsoft Excel and SPSS (version 21). Quantitative variables were summarized as means and standard deviations. Categorical variables were summarized by frequencies and percentages. The mean percentage score for the survey was calculated by multiplying the "very satisfied" column by 5, the "satisfied" column by 4, the "neutral" column by 3, the "dissatisfied" column by 2, and the "very dissatisfied" column by 1. Then summing the resulting figures. After that, division of the sum by the total number of respondents (n=30). The resulting figure (ranges between 1 and 5) was then divided by 5 and multiplied by 100 for meaningful presentation [16].

RESULTS

RESULTS OF THE STRUCTURED OBSERVATION OF THE NKHICU

These results were based on the structured observation carried out by four observers. Each ICU was observed by three observers independently on three different days.

1. General characteristics of the NKHICU:

Regarding the general characteristics of the NKHICU, Matrix (1) shows that the greatest number of beds were present in the surgical ICUs and Professor Sherif Mokhtar ICU (22 and 12, respectively). The smallest number of beds (n=4) was found in the Neurology ICU. The rest of the ICUs had an almost equal number of beds (approximately 8).

The largest ratio between the number of physicians to the number of beds per shift was about 1:4 in the Open-Heart Surgery (adults), Chest, and Neurology ICUs. The Surgical ICUs had the lowest physician: bed ratio (1:11). The rest of the ICUs had physician-to-bed ratios ranging from 1:6 – 1:8. The ratio between the number of nurses to the number of beds per shift was 1:1 in the Cardiology, Gastroenterology, Professor Sherif Mokhtar, Professor El-Gendy, and Neurology ICUs. The lowest nurse-to-bed ratio was in the Open Heart ICU (1:4).

As shown in Matrix 1, the duration and time of patient visiting was one hour from 3-4 pm.

MATRIX 1: GENERAL CHARACTERISTICS OF THE NKHICU

ICU / Checked items	Zero floor		2nd floor				7th floor	
			Ward (A)		Ward (C)		Ward (A)	Ward (B)
	Surgical ICU	Open heart surgery (adults)	Cardiology	Gastro-enterology	Prof. Sherif Mokhtar	Prof. El-Gendy	Chest	Neurology
# of beds and their distribution	22; 3 halls with 6 beds in each + a hall with 4 rooms with 1 bed in each	8; all in 1 hall	8; 2 rooms with 4 beds in each	8; 2 rooms with 4 beds in each	12; 3 halls with 4 rooms in each. Each room has 1 bed.	8; a hall with 6 beds + 2 rooms with 1 bed in each.	8; 2 rooms with 4 beds in each	4; all in 1 hall

# of physicians/8 hours	2-3	2	1	1	2	1	3	1
# of nurses/8 hours	8-10	2-3	8	3-7	11	7	4	4
# of workers/8 hours and their categories	4; 1 store-keeper 1 support services 2 cleaning workers	4; 2 store-keeper 1 support services 1 cleaning worker	3; 1 store-keeper and support services 2 cleaning workers	2; 1 support services 1 cleaning worker	2; 1 store-keeper and support services 1 cleaning worker	2; 1 store-keeper and support services 1 cleaning worker	3; 1 store-keeper 1 support services 1 cleaning worker	3; 1 store-keeper 1 support services 1 cleaning worker
# of family members allowed at the time of visits	No limitation on the number of family members but should not exceed 2 at a time							1
Time and duration of the visit	Sixty minutes from 3.00-4.00 pm							
Are family members allowed to stay overnight with the patients?	No							
The consciousness level of patients	Some are conscious						Unconscious	

2. The physical environment around the beds in the NKHICU:

Matrix 2 shows that the three observers confirmed that all the NKHICU were free of insects and unpleasant odors and had clean walls.

Having trash-free floors was checked as 'not fulfilled' by one observer on the second floor. The following items were checked as 'not fulfilled' by one observer in the Chest ICU; beds covered by clean linens, suitable room temperature, good lighting, and crack-free paint on the wall.

All three observers checked the appearance of the physicians and nurses as neat and clean in all the studied ICUs. One observer checked that the 'neat and clean appearance of the workers' items was not fulfilled in the Professor Sherif Mokhtar and Chest ICUs. All three observers determined that all ICUs on the second floor were secure for patients and their belongings.

MATRIX 2: THE PHYSICAL ENVIRONMENT AND STAFF-PATIENT/FAMILY MEMBER INTERACTIONS IN THE NKHICU

ICU / Checked items		Zero floor		2nd floor				7th floor	
		Surgical ICU	Open heart surgery (adults)	Ward (A)		Ward (C)		Ward (A)	Ward (B)
				Cardio-logy	Gastro-enterology	Prof. Sherif Mokhtar	Prof. El-Gendy	Chest	Neuro-logy
The physical environment in the ICU	Dirt-free floors	1	1	1	1*	1	1	1	1
	Trash-free floors	1	1	1*	1*	1*	1*	1	1
	Clean linens	1	1	1	1	1	1	1*	1
	Free of crawling insects	1	1	1	1	1	1	1	1
	Free of flying insects	1	1	1	1	1	1	1	1
	Suitable temperature	1	1	1*	1	1	1	1*	1
	Good lighting	1	1	1	1	1	1	1*	1
	Free of unpleasant odors	1	1	1	1	1	1	1	1
	Clean walls	1	1	1	1	1	1	1	1
	Crack-free paint	0*	1*	1	1*	1	1*	1*	1
Personnel appearance: neat	Physicians	1	1	1	1	1	1	1	1
	Nurses	1	1	1	1	1	1	1	1
	Workers	1	1	1	1	1*	1	1*	1
Maintaining quietness and silence in ICU	Free of suffering groan from patients	1*	1	1	1*	1	1	1*	1
	Free of help calls from patients	1	1	1	1	1	1	1	1
	Free of altercations	1	1	1	1	1	1	1	1
Security of the patient and belongings		1*	1	1	1	1	1*	1	1
Staff-patient interactions in the NKHICU									
The doctor/nurse expresses kindness & respect to the patient		1	1	1	1	1	1	1	1
Regular availability of nurses		1	1	1	1	1	1	1	1
The doctor responds satisfactorily to patient inquiries		1	1	1	1	1	1	1	1
The nurses respond satisfactorily to patient inquiries		1	1	1	1	1	1	1*	1
The nurses respond quickly to patient help calls		1	1	1	1	1	1	1*	1
Privacy is considered during the examination		1	1	1	1	1	1	1	1
Staff-family interaction in the NKHICU									
The doctor/nurse expresses kindness & respect to the family members		1	1	1	1	1	1	1	1
The doctor/nurse explains the patient's condition to his family members		1	1	1	1	1	1	1	1
The doctor responds satisfactorily to family member inquiries		1	1	1	1	1	1	1	1
The nurses respond satisfactorily to family member inquiries		1	1	1	1	1	1	1	1
Privacy is provided for the family members during the visits		1	1	1	1	1	1	1	1
No altercations between staff and family members		1	1	1	1	1	1	1	1

1= Item is checked as fulfilled by the 3 observers. 1*= Item is checked as fulfilled by 2 observers and as not fulfilled by the third.

0= Item is checked as not fulfilled by the 3 observers. 0*= Item is checked as not fulfilled by 2 observers and as fulfilled by the third.

3. Staff-patient interaction in the NKHICU:

Matrix 2 shows the interaction between the study's patients and NKHICU staff. One observer checked that the nurses did not respond satisfactorily to patient inquiries and help calls in the Chest ICU. Otherwise, all three observers checked all the items as fulfilled in all the studied ICUs.

4. Staff-family member interactions in the NKHICU:

Matrix 2 shows the interaction between the study family members and NKHICU staff. All items were checked as fulfilled by the three observers in all the study ICUs.

5. Characteristics of the waiting area for the family members and services provided for them:

Matrix 3 shows the characteristics of the waiting area for NKHICU family members, and the services provided for them. There were no dedicated waiting areas for family members on the Zero and 7th floors or outside Ward (A) on the 2nd floor. Family members in these ICUs were obliged to either stand or sit on the floor while waiting outside.

There was one waiting area for family members in Ward (C) on the 2nd floor.

In the physical environment of the waiting area, all items were marked as 'fulfilled' by the three observers except for five items (marked as 'not fulfilled' by two observers), namely the items referred to as having dirt-free and trash-free floors, having clean walls, having a suitable number of seats and presence of a trashcan. The number of seats available was 13. One observer remarked that these seats were not enough leaving some family members standing.

MATRIX 3: CHARACTERISTICS OF THE FAMILY WAITING AREAS OUTSIDE STUDIED ICUS AND SERVICES PROVIDED FOR THEM

ICU / Checked items		Zero floor		2nd floor				7th floor	
				Ward (A)		Ward (C)		Ward (A)	Ward (B)
		Surgical ICU	Open heart surgery (adults)	Cardio-logy	Gastro-enterology	Prof. Sherif Mokhtar	Prof. El-Gendy	Chest	Neuro-logy
The physical environment in the waiting area	Dirt-free floors	No special waiting area for the family members	No special waiting area for the family members	No special waiting area for the family members	No special waiting area for the family members	0*		No special waiting area for the family members	No special waiting area for the family members
	Trash-free floors					0*			
	Free of crawling insects					1			
	Free of flying insects					1			
	Suitable temperature					1			
	Good lighting					1			
	Free of unpleasant odors					1			
	Clean walls					0*			
	Crack-free paint					1			
	Suitable #. of seats					0*			
	Seats are comfortable					1			
	There is a trashcan					0*			
Presence of a free source of drinking water, e.g. water cooler						0			
Water Closets (WCs)						Present on the second floor but not specifically dedicated to the family members.			
Security of family members and their belongings						1			
Proximity of waiting area to patients						Near the patients; in the same ward			

1= Item is checked as fulfilled by the 3 observers. 1*= Item is checked as fulfilled by the 2 observers and as not fulfilled by the third one.

0= Item is checked as not fulfilled by the 3 observers. 0*= Item is checked as not fulfilled by the 2 observers and as fulfilled by the third on

RESULTS OF THE STRUCTURED INTERVIEW SATISFACTION QUESTIONNAIRES FOR THE STUDY PATIENTS

Matrix 4 shows the demographic characteristics of the study patients. The majority of them were males (70%). Their ages ranged between 30-75 years, with a mean of 58 years (±12.2). Almost half (46.7%) were aged 60 years and above. About one-third (30%) had a university education. Nearly two-fifths were governmental employees (43.3%), and less than one-fifth were professionals (16.7%). The ICU stay ranged from 2 to 4 days in 70% of the study patients as shown in Matrix 5.

MATRIX 4: SOME DEMOGRAPHIC CHARACTERISTICS OF THE STUDY'S PATIENTS

Item	n. =30	%
Sex:		
• Males	21	70.0
• Females	9	30.0
Age (years) intervals:		
• 30-	3	10.0
• 40-	2	6.7
• 50-	11	36.6
• 60-	8	26.7
• 70-	6	20.0
Age (years):		
• Range (Min: Max)	(30:75)	
• Mean (±SD):	58 (±12.2)	
Education		
• Illiterate	5	16.7
• Can read & write	2	6.7
• Primary	3	10.0
• Secondary/diploma	11	36.6
• University	9	30.0
Occupation		
• Don't work/housewife	6	20.0
• Worker	1	3.3
• Employee	13	43.3
• Craftsman	3	10.0
• Professional	5	16.7
• Pension	2	6.7

MATRIX 5: DISTRIBUTION OF THE STUDY PATIENTS ACCORDING TO THEIR LENGTH OF STAY IN THE NKHICU

Item	n. =30	%
Length of stay (days) intervals:		
• 2-4	21	70.0
• 5-9	6	20.0
• 10-	3	10.0
Length of stay (days):		
• Range (Min: Max)	(1:15)	
• Mean (±SD)	4.1 (±3.5)	

Quantitative findings

Matrix 6 shows the mean percentage satisfaction score of the study patients regarding some NKHICU quality dimensions.

Most patients were satisfied regarding the following aspects of care, which had the highest mean percentage score (in descending order) i.e. ICU staff have a neat appearance 96.4%, continuous availability of nurses to respond to patient needs 94.7%, courtesy of the staff 93.1%, ICU staff listen and respond to inquiries 91%, prompt response to patient needs 89%, presence of good security 88.9%, and competence of nurses 88.6%.

The aspects of care that had the least satisfaction (least mean percentage score) were the shortage of required drugs/supplies 51.5%, the doctors don't involve the patient in medical decisions 60.9%, and the high service price vs. its quality (unexplained high bills) 62.2%. The priorities for quality improvement are those with the least mean percent scores.

MATRIX 6: PATIENT SATISFACTION REGARDING SOME NKHICU QUALITY DIMENSIONS

Statement	Very satisfied %	Satisfied %	Neutral %	Unsatisfied %	Very unsatisfied %	Not applicable/don't know %	Mean % Score
Comfort: Physical environment of the ICU and the appearance of staff							
Cleanliness	50.0	16.7	23.3	3.3	6.7	0.0	80
Suitable atmosphere	46.7	23.3	13.3	16.7	0.0	0.0	80
Level of quietness	56.7	3.3	16.7	10.0	13.3	0.0	76
Free of unpleasant odors	70.0	6.7	3.3	3.3	16.7	0.0	82
Personnel have a neat appearance	85.7	10.7	3.6	0.0	0.0	0.0	96.4
Support and courtesy from ICU staff							
Courtesy	83.3	0.0	6.7	6.7	0.0	3.3	93.1
Emotional Support	70.0	10.0	6.7	3.3	3.3	6.7	90
Assurance and response to needs							
Personnel listen and respond to inquiries	80.0	3.3	6.7	0.0	6.7	3.3	91
Personnel give clear answers	66.7	6.7	6.7	6.7	10.0	3.3	83.4
Personnel give updates about the condition	37.9	6.9	17.2	3.4	17.2	17.2	70.8
Doctor involves the patient in medical decisions	20.0	6.7	20.0	10.0	16.7	26.7	60.9
The patient knows the names of the responsible staff	43.3	10.0	20.0	6.7	13.3	6.7	73.6
Continuous availability of nurses to respond to patient needs	93.3	0.0	0.0	0.0	6.7	0.0	94.7
Prompt response to patient needs	80.0	0.0	6.7	0.0	10.0	3.3	89
Availability of the required drugs/supplies	23.3	3.3	3.3	26.7	30.0	13.3	51.5
Waiting time for investigations/consultations	63.3	6.7	0.0	0.0	13.3	16.7	85.6
Competent doctors	46.7	20.0	13.3	0.0	6.7	13.3	83.1

Competent nurses	60.0	16.7	13.3	3.3	0.0	6.7	88.6
Privacy provided at ICU							
Privacy for patient	60.0	10.0	6.7	10.0	13.3	0.0	78.7
Privacy at the time of the visit	55.2	6.9	10.3	0.0	13.8	13.8	80.8
Additional items							
Presence of security	75.0	10.7	0.0	0.0	10.7	3.6	88.9
Quality of service for its price	33.3	22.2	0.0	11.1	33.3	70.0	62.2
Overall satisfaction	53.3	30.0	13.3	0.0	3.4	0.0	86.0

Qualitative findings

'Increasing the availability of medications and supplies' ranked highest on the list of suggestions for improvements raised by the study patients (30.0%), followed by 'proper maintenance of medical devices' (16.7%). The next frequent suggestions were: 'Reducing the service price', 'increasing courtesy of staff', 'proper cleaning of WCs', and 'keeping quietness/nurses speak in a low voice', (6.7%) each.

RESULTS OF STRUCTURED INTERVIEW SATISFACTION QUESTIONNAIRES FOR THE STUDY FAMILY MEMBERS

Matrix 7 shows that an equal number of male and female study family members responded to the interview questionnaire (15 each). Their ages ranged from 20-72 years, with a mean of 41.3 years (±13.8). The majority were in the age group between 50-59 years (30.0%).

MATRIX 7: SOME DEMOGRAPHIC CHARACTERISTICS OF THE STUDY FAMILY MEMBERS

Item	n. =30	%
Sex:		
• Males	15	50.0
• Females	15	50.0
Age (years) intervals:		
• 20-	7	23.3
• 30-	7	23.3
• 40-	5	16.7
• 50-	9	30.0
• 60-	2	6.7
Age (years):		
• Range (Min: Max)	(20:72)	
• Mean (±SD):	41.3 (±13.8)	

Quantitative findings

Matrix 8 shows the mean percentage satisfaction score of the family members about some NKHICU quality dimensions. Most family members were satisfied regarding the following aspects of care, which had the highest mean percentage score (in descending order), e.g., ICU staff have a neat appearance 97.1%, continuous availability of nurses to respond to patient needs 94.3%, ICU is free of unpleasant odors 94%, good privacy of their patient relative 88.6%, staff listen and respond to inquiries 87.6%, good privacy during visiting hours 83.8% and presence of good security 83.2%.

The aspects of care that had the least satisfaction (least mean percentage scores) were the shortage of required drugs/supplies 40.7%, the high service price vs. its quality (unexplained high bills) 41.1%, and the absence of potable water/ inconvenient conditions in the waiting area 41.4%.

MATRIX 8: SATISFACTION OF THE FAMILY MEMBERS REGARDING SOME NKHICU QUALITY DIMENSIONS

Statement	Very satisfied %	Satisfied %	Neutral %	Unsatisfied %	Very unsatisfied%	Not applicable/ don' t know %	% Score
Comfort: Physical environment and the appearance of staff							
Cleanliness	36.7	40.0	23.3	0.0	0.0	0.0	78
Suitable atmosphere	50.0	20.0	26.7	0.0	3.3	0.0	80
Level of quietness	50.0	20.0	13.3	6.7	6.7	3.3	76.6
Free of unpleasant odors	83.3	10.0	6.7	0.0	0.0	0.0	94
Personnel neat appearance	85.7	7.1	7.1	0.0	0.0	0.0	97.1
Ease of arrival at ICU	46.7	3.3	0.0	13.3	13.3	23.3	70.4
Waiting area							
Suitable number of seats	10.0	10.0	3.3	10.0	66.7	0.0	36.7
Cleanliness	30.0	13.3	3.3	6.7	36.7	10.0	54.1
Presence of potable water	20.0	6.7	0.0	0.0	66.7	6.7	41.4
Cleanliness of WCs	16.7	20.0	16.7	6.7	33.3	6.7	54.3
Lightning	30.0	6.7	6.7	16.7	30.0	10.0	53.3
Support and courtesy from ICU staff							
Courtesy	60.0	20.0	6.7	3.3	6.7	3.3	82.8
Emotional Support	63.3	16.7	3.3	0.0	13.3	3.3	81.4
Assurance and response to needs							
Personnel listen and respond to inquiries	70.0	6.7	6.7	6.7	6.7	3.3	87.6
Continuous availability of nurses to respond to patient needs	80.0	3.3	3.3	3.3	3.3	6.7	94.3
Availability of required drugs/supplies	14.3	3.6	10.7	14.3	57.1	0.0	40.7
Waiting time for investigations/consultations	43.3	3.3	10.0	10.0	23.3	10.0	65.2
Competent Doctors	40.0	6.7	13.3	3.3	3.3	33.3	80
Competent Nurses	48.3	6.9	13.8	3.4	3.4	24.1	81.8
Privacy provided at ICU							
Privacy for patient	57.1	7.1	0.0	0.0	10.7	25.0	88.6
Privacy during visiting hours	60.0	10.0	6.7	0.0	10.0	13.3	83.8
Additional items							
Presence of good security	48.1	7.4	3.7	7.4	3.7	29.6	83.2
Quality of service vs its price	16.7	0.0	0.0	33.3	50.0	40.0	41.1
Overall satisfaction	20.0	23.3	43.3	10.0	3.4	0.0	64.7

Qualitative findings

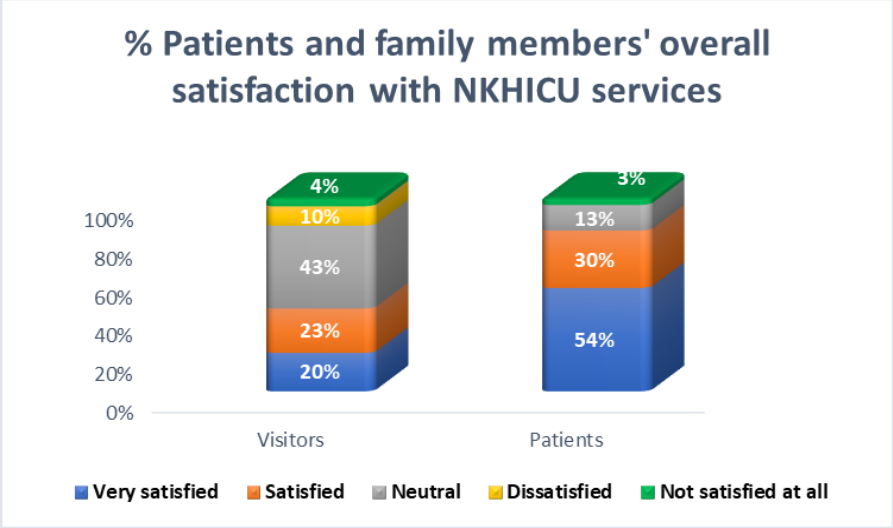
The top three suggestions that were raised by the family members were related to increasing the availability of some medications/supplies, improving the waiting area, and reducing the service prices (20.3%, 17.6%, and 9.5%, respectively).

OVERALL RATING OF THE QUALITY OF NKHICU SERVICES

Figure 2 demonstrates that most of the study patients (84.0%) showed satisfaction with the NKHICU service (percentage satisfied and very satisfied), while only about

two-fifths of family members (43.0%) showed satisfaction (percentage satisfied and very satisfied).

FIGURE 2: THE OVERALL SATISFACTION OF THE STUDY PATIENTS AND FAMILY MEMBERS WITH THE NKHICU SERVICES PROVIDED



DISCUSSION

This is the first ICU patient and family satisfaction survey conducted in NKH, a mega teaching hospital (hospital with 1200 beds and full range of primary, secondary, tertiary and quaternary services). The study aimed to improve the quality of services in the NKHICU with the goal of patient and family satisfaction. Measuring patient and family satisfaction has a great influence on the quality improvement of care. Their evaluation of care is a truthful tool to provide an opportunity for improvement, enhance healthcare decisions, reduce cost, set plans for effective management, monitor healthcare performance, and provide benchmarking across healthcare facilities. Moreover, as healthcare services tend to focus on patient-centered care, measuring patients' satisfaction indicates their involvement in decision-making and their role as collaborators in improving healthcare quality [17].

Being admitted to the ICU is stressful for both patients and families [4], in addition to being very costly [5]. For this reason, the ICU was chosen for conducting the study.

Min et al., it was crucial to identify the satisfaction levels of both patients of the NKHICU and their families. In many incidences, ICU patients are unable to actively participate in discussions involving their diagnosis and treatment. In such conditions, the responsibility falls on family members to discuss with health providers and make important decisions related to the care of their loved one [18].

This study used several robust data collection tools derived from previous studies (especially those conducted in ICUs) [4, 10, 19] to determine the level of satisfaction and suggestions made by the patients and their families.

Moreover, the observation of each ICU was carried out by three individuals at different times of the day to ensure objectivity and avoid bias [20]. Strict training on both observation and use of the interview questionnaire was provided to members of NKH. This allowed them to participate in data collection and ensured technical sustainability and replicability. Observation results provided invaluable information, which was the gate to the subsequent phases of the study.

In other words, feedback in this study was obtained through multiple methods, namely the analysis of the observation results, patient and family questionnaires, and interviews with the patients/family members. This feedback can be used in prioritizing subsequent improvement initiatives. This concurs with the methods of Bonilla et al., Buttigieg et al., Ali Akram et al., and AbuZina et al. in their studies [21–24].

From the quantitative findings of the study, the patients and family members were both satisfied with these items: continuous availability of nurses to respond to patient needs, courteousness of the staff, staff listening and responding to inquiries, and prompt response to patient needs. These findings go in line with the study done by Haave et al. where the family members were very satisfied with the nursing care, the courteousness of the staff, the

time available for getting answers to their questions, and the willingness of ICU staff to reply to these questions [25]. The family's demand for information about their ICU patient's condition, care, and therapy is emphasized in several previous studies [26, 27]

Also, among the top causes of participants' satisfaction was the presence of enough privacy for their patient relatives during the visiting hours. On the contrary, other studies that measured families' satisfaction in ICU [4, 28, 29] found that privacy needed to be improved.

On the other hand, the top cause that led to patient and family dissatisfaction was that family members were sent to buy medications/supplies (out-of-pocket) due to their lack of availability in the hospital. This goes hand in hand with the qualitative findings where the provision of enough medications/supplies ranked the top suggestion. Likewise, recurrent drug deficiency was the commonest cause of dissatisfaction by a great percentage of patients in a study done by Zidan, so they had to buy their medications from private pharmacies out of their pockets [16].

The second cause of dissatisfaction was the unexplained high service price. This is consistent with the qualitative findings in which reducing bills is among the top suggestions for improvement. Of course, this affects the economic status of the patients and families and may lead to impoverishment due to health expenditures. The findings are similar to that of Eltaybani, who found that the high out-of-pocket expenses for the service were significantly correlated with low satisfaction [14].

In Egypt, attempts to set up universal health insurance have already been started to expand healthcare coverage to include those who are not covered and those who cannot pay the annual insurance contributions [30].

The next cause of low satisfaction was the limited number of seats and waiting areas dedicated to the families inside the ICU. A question is raised here if this was intended by the NKHICU. This was likely to oblige the family members to attend exactly at the appointed time for the visit. This also would reduce the crowding and noise in the ICU vicinity, which may compromise the medical team's performance and hinder the smooth movement of trolleys and medical tools. However, the NKH authorities have already saved convenient amenities and enough seats outside the ICU vicinity to ensure the comfort of families. In line with many studies, inconvenient waiting areas caused considerable dissatisfaction for ICU families [18, 25, 28, 29]. Unfortunately, this means they do not realize that their presence in large numbers for long periods in the ICU vicinity will constitute an undue burden on the ICU facilities.

It also clarifies why the duration of the visit is a fixed one hour. This is called the limited visiting policy. There has been a debate about the value of a limited visiting policy versus the open-visiting one (i.e., visits extend for long times). [31]. While the open visiting assures the patient and ameliorates his fears, it has some drawbacks. It compromises the patient's need for rest, disturbs medical care, and increases the risk of nosocomial infections [32]. This explains the commitment of NKHICU to the limited visiting policy.

LIMITATIONS OF THE STUDY

Due to the selection of participants conveniently from one setting, the generalizability of the current findings to other ICU settings is unlikely.

CONCLUSION

Feedback from patients and their families is crucial to guide quality improvement in the ICU. Providing adequate drugs/supplies, reducing bills, and addressing patients' and families' concerns will improve their satisfaction with services.

RECOMMENDATIONS:

Ensure a reliable, effective feedback system for patients and families to target their concerns and guide quality improvement based on this feedback. Stakeholders, nurses, and physicians should consider aspects of low satisfaction and implement strategies to solve them.

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