'Impact Of COVID-19 Pandemic On Patient Satisfaction In National Liver Institute Hospital, Egypt.

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ABSTRACT

Background: Coronavirus disease 2019 (COVID-19) pandemic impacted both healthcare services quality & patient satisfaction. Patient satisfaction is a measure of the quality of healthcare services. Because of restrictions on global movement, the COVID pandemic precipitated unpredictability & a scarcity of medical supplies.

Aim of the study: to evaluate patient satisfaction during COVID pandemic & related factors at National Liver Institute hospital (NLI), Menoufia University, Egypt.

Methods: Six months cross sectional hospital-based research performed during COVID-19 Pandemic from 1st April to 30th September 2022 on 415 randomly selected patients either admitted or followed-up at NLI hospital. For collecting information, a structured interviewer-administered questionnaire was utilized.

Results: The overall patient satisfaction score was 97.1%. Among the sociodemographic factors measuring the total satisfaction level of our studied patients; Patient's age, address & occupation were significantly related with overall patient satisfaction score with 0.021, 0.007 & 0.036 p values respectively. While among the hospitalization factors; Time passed since first visit, the frequency of visiting NLI hospital and hospital department type were significantly related with overall patient satisfaction score with 0.006, 0.01 & 0.02 p values respectively. 82.2 % patients' satisfaction regarding COVID-19 NLI hospital prevention and control measures.

Conclusion: Appropriate precautions taken by NLI healthcare workers to address patients' safety during COVID-19 pandemic increases overall patients' satisfaction score.

Keywords: Patient satisfaction; COVID-19; Associated factors.

INTRODUCTION

Over time, the healthcare system has transformed from a traditional notion of a noble profession to an industry focused on providing services to customers **(Prakash, B., 2010).** As a consequence, the healthcare industry is confronted with the task of providing patient-centered, secure, equitable, evidence-based, timely, & effective healthcare services of superior quality **(Committee on Quality of Health Care in America., 2001).** Patient satisfaction is "a measure of the extent to which a patient is content with the healthcare that they received from their healthcare provider" **(Manzoor, F et al., 2019).**

Conducting a patient satisfaction survey has the potential to generate valuable, high-quality information that can significantly benefit healthcare professionals, cases, &the community at large **(Adekanye, A. O et al., 2013).** Regarding to Health service researchers observed a distinction in patient behavior between those who were satisfied & dissatisfied. Specifically, patients who were satisfied exhibited higher rates of adherence to treatment plans, attendance at follow-up appointments, and utilization of health services **(Assefa, F., & Mosse, A., 2011 & Verma, N et al., 2022).**

There are two primary methods for assessing patient satisfaction: direct & indirect. Periodic field surveys are utilized to sample the general population & cases from alternative healthcare delivery systems in the indirect method. The direct method involves conducting exit interviews with cases to determine their level of satisfaction with specific healthcare facilities or providers **(Iliyasu, Z et al., 2010).**

In addition to establishing performance standards, patient satisfaction elevates the responsibility of medical professionals & staff, & most significantly, it results in an enhancement of healthcare quality. Patient satisfaction has been found to be significantly & positively correlated with the following: nurses exhibiting a respectful personal manner, physicians demonstrating a pleasant physical environment, patients having a positive perception of the physicians' technical abilities, & both nurses & physicians spending enough time to describing the procedure **(Ko, H. H et al., 2009).**

Healthcare systems in the majority of underdeveloped nations are inadequately prepared to meet the complex challenges of the ongoing COVID-19 pandemic due to severe financial constraints, inadequate equity, & poor quality **(Deriba et al., 2020).**

As a preventive measure against COVID-19, the World Health Organization (WHO) announced in March 2020 that in healthcare settings, social distance, regular hand washing & population density reduction would be applied to reduce community transmission of the virus **(Eubank, S et al., 2020).**

The purpose of the research is to evaluate satisfaction of patients utilizing NLI hospital medical services and to prioritize factors related to their satisfaction.

PATIENTS AND METHODS

Ethical considerations:

1. A verbal and written informed consent was obtained from all participants (patients) before participation in the study.

2. The objectives of the study, the expected benefits and types of information to be obtained were explained to them.

3. An approval by the local ethical committee at the National Liver Institute (NLI), Menoufia University, Egypt, name: NLIIRB00003413FWA0000227 was obtained before the study, with approval number (00289)

4. The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

5. All the data and results of the study are confidential and the participants had right to keep it. At the start of the study, an explanation of the study was provided, to ensure the potential participant had adequate information to provide informed consent.

6. The participant has the right to withdraw from the study questionnaire at any time.

7. Funding: Not applicable.

Sample Size Determination: The sample size measured utilizing a single population proportion formula, based on another study **(Gedefaw, M et al., 2014),** taking a proportion of 58.3%. The final sample size was 415, taking into account a twenty percent non-response rate, a five percent marginal error, & a confidence interval of ninety-five percent.

Inclusion criteria:

1- All patients aged fifteen years or older
2- Both sexes
3- Any patients receiving health service at National liver institute either follow-up or admitted at National Liver Institute Hospital were involved in the research.

Exclusion criteria: Patients who presented at National Liver Institute Hospital for chronic disease follow-up with symptoms &signs suggestive of COVID-19 & were critically ill (i.e., unable to communicate) were unsuitable to participate in the research. Such patients were excluded from the research.

Study Design, Period, and Area: 6 months cross-sectional hospital-based research was performed on 415 cases either follow-up or admitted at National Liver Institute Hospital from 1st April to 30th September 2022.

Data Collection Tools & Procedure: Information was gathered via semi-structured questionnaires derived from comparable articles & direct face-to-face interviews. [11, 12]

Validating the questionnaire used through the following process:

The questionnaire was submitted to a panel of 4 Community Medicine expertise (2 professors, 1 assistant professor and 1 lecturer) to test its validity.

Reliability: The researcher employed test-retest reliability to assess the internal consistency of the research instruments. It was accomplished by administering the same substances to the same participants twice within one week of each other under identical conditions.

The outcome of patient satisfaction was evaluating utilizing satisfaction measurement tools based on five-point Likert scale scored from one to five (one = strongly disagree, two = disagree, three = neutral, four = agree, & five = strongly agree). The inclusion & conversion of response to satisfaction measuring items resulted in the assignment of a unique level of satisfaction score ranging from 1% to 100% to each item. Cases who obtained a score of 75% or higher were satisfied, while those who obtained a score below 75% were dissatisfied (**Gedefaw, M et al., 2014 & Webster, T. R et al., 2011).**

Data Analysis: The SPSS version 23 software was utilized to conduct the data analysis. Descriptive statistics as tables, & graphs were used to present the data through frequencies & percentages for qualitative data, while quantitative data were expressed as mean and standard deviation or median and interquartile range (IQR). Chi-square test was utilized to detect correlation among qualitative variables. Fischer's Exact test was utilized when the expected cells count less than five. Patients who were satisfied scored "2" whiles dissatisfied patients scored "1".

RESULTS

Table 1: Socio demographic data of our examined cases:

variables	Participants No. (%)
Gender	
Male	221 (53.3 %)
Female	194 (46.7 %)
Age	
Mean ± SD	45.2± 16.2
Median-IQR	43-29
Min-max	20-82
Age groups	
Young adult (17-30)	101 (24.3%)
Middle aged adult (31-45)	122 (29.4%)
Old aged adult (above 45)	192 (46.3%)
Address	
From menoufia	222 (53.5 %)
From outside menoufia	193 (46.5 %)
Residence	
Urban	115 (27.7 %)
Rural	300 (72.3%)

Education	
Illiterate	123 (29.6 %)
Primary & secondary or diploma education	225 (54.2%)
Higher education	67 (16.1 %)
Occupation	
Not working	266 (64.1 %)
Farmer	16 (3.9%)
Government employee	77 (18.6%)
Private employee	14 (3.4%)
others	42 (10.1%)
Monthly income	
Not enough	354 (85.3 %)
Enough	59 (14.2 %)
More than enough	2 (0.5 %)

This table shows that the study enrolled 415 patients in total, representing a response rate of 100%. 221 (53.3 %) were male, while 192 (46.3%) of the respondents were old aged adult (above 45 years). 300 (72.3%) of participants were from rural areas. while 225 (54.2%) had primary, secondary or diploma education. About 266 (64.1 %) had no occupation and 222 (53.5 %) living in Menoufia Governorate

Table 2: Hospitalization characteristics of our studied patients:

variables	Participants No. (%)
Time since first visit	
First time	143 (34.5 %)
Less than year	158 (38.1 %)
More than year	114 (27.5 %)
Frequency of attending	
First time	143 (34.5 %)
frequent	272 (65.5 %)
Services	
Outpatient	170 (41.1 %)
Radio	6 (1.4 %)
Lab	6 (1.4 %)
Inpatient	233 (56.1 %)
Department	
Hepatology	114 (49 %)
Surgery	66 (28.3 %)
Pediatric	

	53 (22.7 %)
Payment	
His own expense	61 (14.7 %)
Health insurance	216 (52 %)
State expense	138 (3.3 %)

This table shows that about 233 (56.1 %) of the participants were inpatients while 170 (41.1 %) were outpatients. 114 (49 %) of inpatients were admitted to hepatology department, while 66 (28.3 %) were admitted to hepato-surgery department, only 53 (22.7 %) were admitted to pediatric hepatology department. About 216 (52 %) were treated on health insurance expenses. 272 (65.5 %) of the studied patients were frequently attending NLI hospital, and 143 (34.5 %) were admitted to the hospital for the first time.

Table (3): Level of our studied patient satisfaction with variant service categories:

variable	Satisfied No. (%)	Unsatisfied No. (%)
total patient satisfaction about registration services	371 (89.4 %)	44 (10.6 %)
total patient satisfaction about nursing services	390 (94 %)	25 (6 %)
total patient satisfaction about physician care services	397 (95.7 %)	18 (4.3 %)
total patient satisfaction about X-ray and lab services	378 (91.1 %)	37 (8.9 %)
total patient satisfaction about covid-19 prevention and control measures	341(82.2 %)	74 (17.8%)

This table shows that between the five service groups utilized to evaluate total satisfaction rate of cases, this research result detect that 371 (89.4 %) of the examined patients were satisfied about registration services at NLI hospital, while 390 (94 %) patients were satisfied about nursing services. 397 (95.7 %) patients were satisfied with physician care services, as well as 378 (91.1 %) patients were satisfied with radiology & laboratory services, while 341 (82.2 %) patients were satisfied with COVID-19 prevention and control measures.

Table (4): Socio-demographic factors affecting our studied patients' satisfaction about health services:

Personal and demographic data		satisfied No. (%)	unsatisfied No. (%)	Fisher's exact test	P value
Gender	Female	187 (46.4 %)	7 (58.3 %)	0.666*	0.414
	Male	216 (53.6)	5 (41.7 %)		
Age groups	Young adult (17-30)	101 (25.1%)	0 (0.0%)	6.927	0.021
	Middle age adult (31-45)	120 (29.8%)	2 (16.7%)		
	Old age adult (>45)	182 (45.2%)	10 (83.3%)		
address	From Menoufia	211 (52.4%)	11 (91.7 %)	7.238*	0.007
	From outside Menoufia	192 (47.6%)	1 (8.3 %)		
Residence	urban	114 (28.3 %)	1 (8.3 %)	2.316	0.192
	rural	289 (71.7 %)	11 (91.7 %)		
Education	Illiterate	118 (29.3%)	5 (41.7%)	2.593	0.313
	Primary and Secondary or diploma	221 (54.8%)	4 (33.3%)		
	Higher education	64 (15.9%)	3 (25%)		
occupation	Not working	261 (64.8%)	5 (41.7 %)	8.888	0.036
	Farmer	16 (4%)	0 (0.0%)		
	Government employee	70 (17.4%)	7 (58.3 %)		
	Private employee	14 (3.5%)	0 (0.0%)		
	others	42 (10.3%)	0 (0.0%)		
Monthly income	Not enough	346 (85.9%)	8 (66.7%)	4.644	0.129
	enough	55 (13.6%)	4 (33.3%)		
	More than enough	2 (0.5%)	0 (0.0%)		

Chi square test (X2)

This table shows that among the sociodemographic factors measuring the total satisfaction level of our studied patients; Patient's age, address & occupation show independent association with total patient satisfaction level at p less than 0.05. However, gender, residence, education, and monthly income show no statistically significant association

Table (5): Hospitalization factors affecting our studied patients' satisfaction about health services:

Health care service data		satisfied No. (%)	unsatisfied No. (%)	Fisher's exact test	P value
Department	Hepatology	107 (93.9%)	7 (6.1%)	6.152	0.022
	Surgery	66 (100%)	0 (0.0%)		
	Pediatric	53 (100%)	0 (0.0%)		
Services	Outpatient	165 (97.1%)	5 (2.9%)	0.699	1.000
	Radio	6 (100%)	0 (0.0%)		
	Lab	6 (100%)	0 (0.0%)		
	Inpatient	226 (97%)	7(3%)		
Time since first visit	First time	143 (100%)	0 (0.0%)	9.316	0.006
	Less than year	153 (96.8%)	5 (3.2%)		
	More than year	107 (93.9%)	7 (6.1%)		
Frequency of attending	First time	143 (100%)	0 (0.0 %)	6.497	0.010
	Frequent	260 (95.6%)	12 (4.4 %)		
payment	His own expense	61 (100%)	0 (0.0 %)	2.718	0.230
	Health insurance	207 (95.8%)	9 (4.2 %)		
	State expense	135 (97.8%)	3(2.2 %)		

This table shows that time passed since first visit, the frequency of visiting NLI hospital and the hospital department type show independent association with total patient satisfaction level (p- value less than 0.05). However, the type of services and payment method were not statistically significant (p-value > 0.05).

Table (6): Socio-demographic factors affecting our studied patients' satisfaction about COVID-19 prevention & control measures:

Personal and demographic data		satisfied No. (%)	unsatisfied No. (%)	Chi square test (X^2)	P value
Gender	Female	156 (45.7%)	38 (51.4%)	0.767	0.381
	Male	185 (54.3%)	36(48.6%)		
Age groups	Young adult (17-30)	82 (24%)	19 (25.7%)	0.331	0.848
	Middle age adult (31-45)	99 (29%)	23 (31.1%)		
	Old age adult (>45)	160 (47%)	32 (43.2%)		
address	From Menoufia	181 (53.1%)	41 (55.4%)	0.132	0.716
	From outside Menoufia	160 (46.9%)	33(44.6%)		
Residence	urban	96 (28.2%)	19 (25.7%)	0.186	0.666
	rural	245 (71.8%)	55 (74.3%)		
Education	Illiterate	103 (30.2%)	20 (27%)	2.843	0.241
	Primary and Secondary or diploma	179 (52.5%)	46 (62.2%)		
	Higher education	59 (17.3%)	8(10.8%)		
occupation	Not working	214 (62.8%)	52(70.2%)	5.128	0.274
	Farmer	15 (4.4%)	1 (1.4%)		
	Government employee	64 (18.8%)	13 (17.6%)		
	Private employee	10 (2.9%)	4 (5.4%)		
	others	38(11.1%)	4(5.4%)		
Monthly income	Not enough	292(85.6%)	62 (83.8%)	0.546*	0.720
	enough	47 (13.8%)	12 (16.2%)		
	More than enough	2 (0.6%)	0 (0.0%)		

Fisher, s exact test

This table shows that among the sociodemographic factors affecting the satisfaction level of participants regarding COVID-19 prevention & control measures; All factors were not statistically significant (p-value higher than 0.05)

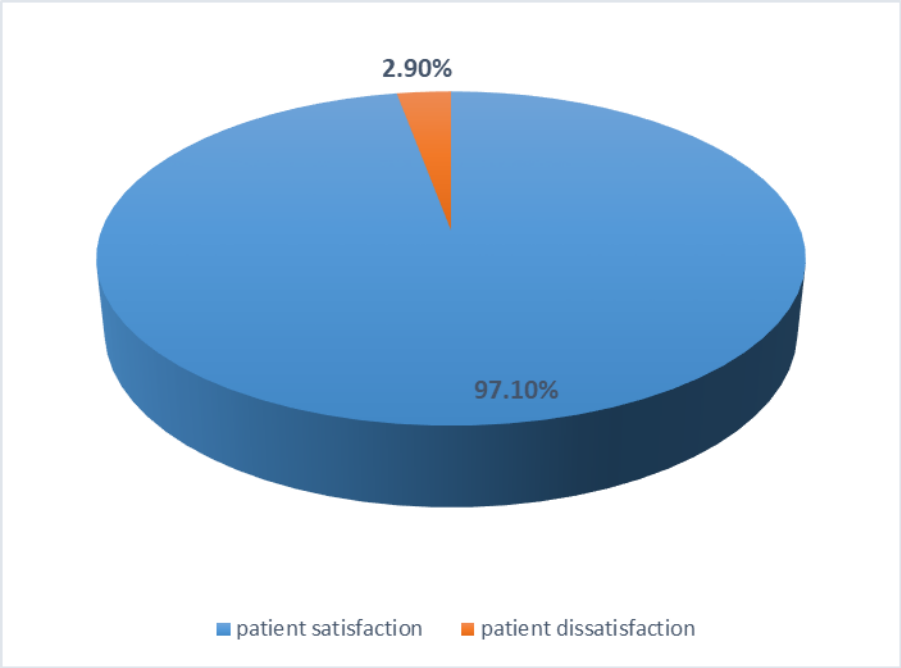
Table (7): Hospitalization factors affecting our studied patients, satisfaction about COVID-19 prevention & control measures:

Health care service data		satisfied No. (%)	unsatisfied No. (%)	Chi square test (X^2)	P value
Department	Hepatology	101 (88.6%)	13 (11.4%)	0.461	0.794
	Surgery	58 (87.9%)	8 (12.1%)		
	Pediatric	45 (84.9%)	8 (15.1%)		
Services	Outpatient	127 (74.7%)	43 (25.3%)	11.134*	0.007
	Radio	5 (83.3%)	1 (16.7%)		
	Lab	5 (83.3%)	1 (16.7%)		
	Inpatient	204(87.6%)	29 (12.4%)		
Time since first visit	First time	123 (86%)	20 (14%)	11.246	0.004
	Less than year	136 (86.1%)	22 (13.9%)		
	More than year	82 (71.9%)	32 (28.1%)		
Frequency of attending	First time	123 (86%)	20 (14%)	2.202	0.138
	Frequent	218 (80.1%)	54 (19.9%)		
payment	His own expense	44 (72.1%)	17 (27.9%)	4.921	0.085
	Health insurance	181 (83.8%)	35 (16.2%)		
	State expense	116 (84.1%)	22 (15.9%)		

Fisher, s exact test

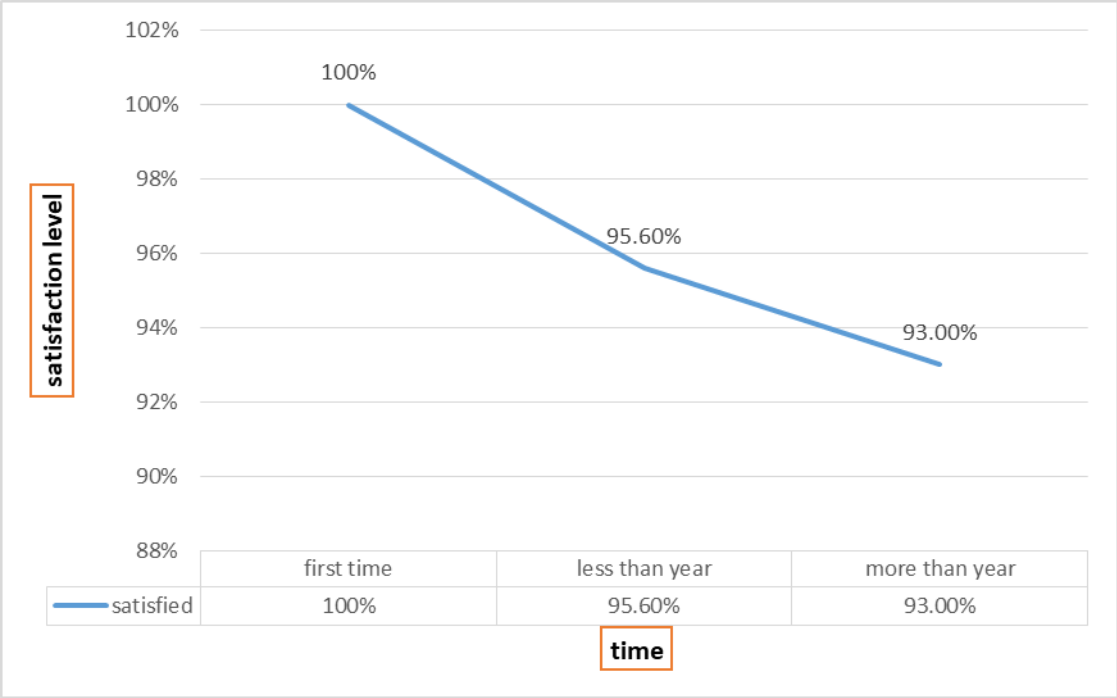
While among hospitalization factors; type of the received services & time passed since the first visit show independent association with patient satisfaction level with p- value less than 0.05. However, the type of hospital department, frequency of visiting and payment method weren't statistically significant (p-value higher than 0.05)

Figure (1): prevalence of our studied patients' satisfaction about health services at the National Liver Institute (NLI) hospital:



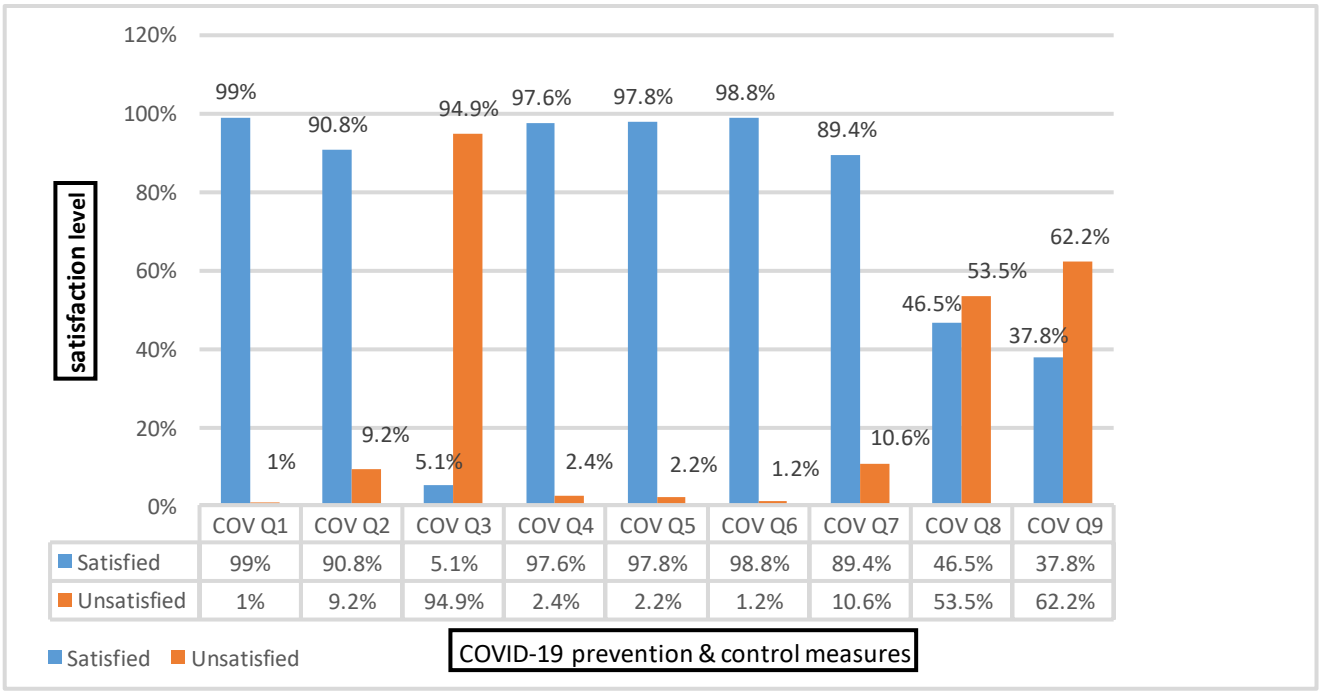
This figure shows that the overall satisfaction of our studied patients with health services at the National Liver Institute (NLI) hospital was 97.1%. On the other hand, 2.9% of the study participants had dissatisfaction

Figure (2): Total patient satisfaction level according to time since first visit:



This figure shows that there was inverse relationship between the level of patient satisfaction about health services at NLI hospital and time passed since the first visit; as satisfaction level was 100 % during the first visit then decreased to 95.6% within one year from the first visit, then decreased to 93% within more than year from the first visit.

Figure (3): the level of our studied patients, satisfaction about COVID-19 prevention & control measures at NLI hospital:



COV.Q1	Commitment to wear a mask before entering the hospital
COV.Q2	Commitment to measure the temperature before entering the hospital
COV.Q3	Alcohol and sanitizer are available for hand cleaning
COV.Q4	Keeping physical distance in the hospital
COV.Q5	clinicians wear gloves during the healthcare giving
COV.Q6	clinicians wear the mask during the healthcare giving
COV.Q7	clinicians rub their hands with alcohol before and after healthcare giving
COV.Q8	Health professional provides health education on COVID-19
COV.Q9	the hospital provides screening services for COVID-19

This figure shows that 94.9% of the participants were unsatisfied about availability of alcohol and sanitizer for hand cleaning, while 97.6% were satisfied about keeping physical distance in the hospital. However (53.5%) of studied patients were unsatisfied about providing health education on COVID-19 by health professionals, and finally 62.2% were unsatisfied about providing screening services for COVID-19 at NLI hospital.

DISCUSSION

In the past, health care providers obtained they understood the needs of their cases on the basis of their evaluation & professional standards **(Hoerold, M., et al., 2021).** At this time, medical providers place a higher priority on patients' satisfaction with healthcare as a result of the evolving patient awareness & an increasing competitive health-care environment **(Methammem, F., & Abdallah, M. A. B. 2022).** The examination of patient satisfaction yields insights into areas of concern regarding care as well as the effectiveness or ineffectiveness of the healthcare organization as a whole **(Sinyiza, F. W et al., 2022).** Healthcare providers can utilize the data gathered to inform corrective steps within the healthcare system **(Miller, M. J., et al., 2021).** Physician competence, the accessibility of health care, & the organization of its services are the primary determinants of patient satisfaction **(Kludacz-Alessandri, M et al., 2021).**

Out of all study participants, 193 (46.5 %) were from outside Menoufia, this is because National Liver Institute hospital is one of the largest government hospitals in Egypt and serves many cases daily from all over Egypt.

Our study shows that the overall satisfaction of our studied patients with health services at the National Liver Institute (NLI) hospital was 97.1%, which is high level. This might be because our hospital is a national, tertiary, and highly specialized hospital. It is one of the best hospitals in Egypt. It has better facilities and higher health care quality compared to other primary or secondary health care facilities. It also has highly specialized and qualified medical staff capable of dealing with any cases of liver diseases. This is in line with other studies in different Arab countries such as Saeed et al in Riyadh PHCs, Abutiheen et al in Karbala and AlTawil et al in Iraqi as the overall satisfaction level was 75%, 64.7% and 69.3% respectively **(Saeed, A. A et al., 2001, Abutiheen, A. A., 2014 & Al-Tawil, N. G et al., 2011).** However, our findings are much greater than patient satisfaction percent in EL-Demerdash hospital, Ain Shams University, Egypt which was 48.8% (Farghaly, M et al., 2021). Also, Afsar & Younus (2004) in Pakistan found that the satisfaction rate was 68.4% **(Afsar, H. A., & Younus, M. 2004).**

Variation in patient satisfaction thresholds, study settings, & time zones, as well as variances in socioeconomic status & patient managing strategies among healthcare facilities, may account for this variance.

Our research shows that there was inverse association among the level of patient satisfaction about health services at National Liver Institute (NLI) hospital and time passed since the first visit; as satisfaction level was 100 % during the first visit then decreased to 95.6% within one year from the first visit, then decreased to 93% within more than a year from the first visit. This might be because the medical records of the patients may be lost and they had to create their medical records again, which is time consuming. So, we need to establish electronic medical record system at NLI hospital to save all patient data and overcome this problem. Also decreased patient satisfaction level may be due to the higher use rate of NLI hospital that resulted in a greater number of appointment delays. On the other hand, a study for evaluation of Primary Health Care Specialized Reference Clinics in Riyadh found that the overall patients' satisfaction with the provided services was 71.4% in the first year of service & raised up to 73.2% in the 2nd year **(Alshowair, A. et al., 2022).**

Regarding COVID-19 prevention and control measures, we found that 94.9% of the participants were unsatisfied about availability of hand sanitizer & alcohol for cleansing the hands. This is high percent of dis-satisfaction related to increasing patient's awareness about COVID preventive measures through social media. This outcome is coincided with the outcome of a research about Patient Satisfaction & Related Factors during COVID-19 Pandemic in Ethiopia, as cases who obtained hand sanitizer & alcohol for cleaning, as well as A statistically significant correlation was observed between patient satisfaction & the

adherence to & observation of improved social distancing protocols within healthcare facilities **(Deriba et al., 2020).**

In that study we found that most of satisfied patients were old age (above 45 years) (p value= 0.021), this may be because younger patients are less compliant with health care providers and more distrustful of paramedics, whereas Compliance is more likely to be observed among older patients & respectful of providers. Additional research of a similar nature that examined the impact of sociodemographic characteristics on patient satisfaction found that, in comparison to younger patients, older patients were more inclined to express satisfaction. However, some other studies found that there isn't consistent association among patient satisfaction with age **(Mezemir, R et al., 2014).**

CONCLUSION

The level of satisfaction among NLI hospital patients was very high. Patient's age, address & occupation, time passed since first visit, the frequency of visiting NLI hospital and the hospital department type were factors associated with total satisfaction level.

RECOMMENDATIONS

We recommend that a strategic plan is necessary for the NLI hospital for enhancing the quality of the preventive service it provides, the hospital should provide the updated equipment to the doctor for providing treatment to the patient, also they should establish electronic medical record system to save all patient data and facilitate the registration processes of the patients.

Abbreviations:

NLI: National Liver Institute.
COVID-19: Corona Virus Disease-2019.
SPSS: Statistical Package for Social Science.
WHO: World Health Organization

Declarations:

Consent for publication: I confirm that each author has given their consent to submit the work.
Availability of data and material: Available
Competing interests: the authors declare that they have no competing interests
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