



A study of patient satisfaction at primary health care centers and the quality impact of the services in Makkah

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Abstract: Patient satisfaction scale is considered as one of the desired tools to evaluate the services offered by the healthcare system. It involves multi-dimensional aspects and depends on the quality of clinical services provided. Though majority of Saudi population are using public health sectors, particularly PHCC, the effectiveness and quality of essential services at these centers needs to be evaluated frequently so that a domesticated and localised health care plan could be developed and improved. This study aims to assess patient satisfaction at primary health care centers and to examine the quality impact with respect to PHC services in Makkah province. A cross-sectional study was obtained in five selected PHCCs with using a pre-designed questionnaire, during 2019. Data regarding patient's opinion related to services offered to Saudi patients at these centres, the response of health care providers and the quality of primary care were analysed using standard statistical methods. Correlation between quality of health care and quality of the facility along with patient satisfaction level, was determined. Significant association were found in quality of health care, ($r= 0.771$ and $p\text{-value} < 0.001$) and quality of the facility, ($r= 0.746$ and $p\text{-value} < 0.001$) related to patient satisfaction. The study specified that patients were generally satisfied with the level of quality and medical practices in PHCCs with some aspects of health care need to be improved.

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1. Introduction:

Primary health care (PHC) is delivered through health care centres. Health care centres are known as the first gate of aid and support for the patients seeking health care supervision(1). In general, PHC services cover preventive, promotive, rehabilitative and curative care aspects which all have been constructed, formulated and appraised by health care institutions (2-5). For example, the world health organization (WHO) issued the Alma Ata declaration in 1978 and stated the need to achieve health care for all the people of the world by the year 2000. After the announcement, many countries started implementing in this approach, and Saudi Arabia (SA) has adopted this notion to their health care systems since 1980 (3).

Many health care communities are planning to commit universal health coverage by the year 2030. However, ideal health care services cannot be

delivered by assuring the full integration of infrastructure, medical supplies and health care providers. Moreover, improvement in health system needs careful attention on the quality of health care services which includes effective services, secure, people-centred care that is timely, efficient, incorporated and reasonable. So, quality of care can be defined as the degree to which services for citizens increase the probability of preferred results and are in line with current professional understanding (6).

Besides, health care in Saudi Arabia has seen many changes over the last years. The goals of health care changed with the necessities of community and the availability of facilities and resources. Saudi population itself has expanded significantly in the past few decades, from around 5.7 million citizens in 1970

to reach approximately 34.1 million in 2019 (7;8). Previous studies showed that the presence of a large number of foreigner workers and young people are the most important factors affecting health care services(9). Around 12.6 million individuals (37% of the population) are considered as foreign nationals, while 72% of the population (24.5 million people) is within the average of 15-64 years old, in SA(10). As a result, the increasing number in the population has profoundly found to affect the future shape and direction of the health care system (9).

The Kingdom of Saudi Arabia (KSA), like several countries, is pursuing to reconfigure its current health system to improve the quality of care for citizens and restrain the burdensome, escalating costs that generated by serving the care (4;9). Furthermore, the approaches of PHC development in SA include expanding PHC centers at all sectors, coordinating between primary, secondary and tertiary hospitals under the Ministry of Health (MOH) commands and controls (4). According to the recent annual statistical book released by the MOH in Saudi Arabia, there are 2390 PHC centres across the sectors in 2018. On average, each centre provides health care services to 13980 people. Makkah city has 85 PHC centres, which represent five centres per 150,000 populations(10).

Variations in the quality impact of primary health care exist in many sectors, and the MOH is facing challenges due to growing demand for standard health care, rising cost and public pressure for better services(3). As a result, quality service in the healthcare system is increasingly required and recognized either by service providers (policy-makers) or recipients (patients) (11). However, health care providers use different measurements to evaluate the quality of services in PHC centers. Therefore, patients' satisfaction considered to be an essential element in determining health care outcome and quality in Saudi Arabia (SA) (3;12).

2. Material and Method:

The present study was conducted at five MOH primary health care centres serving the largest population (more than 279226 inhabitants annually) in Makkah province. These were Batha Quraish, Al-Awali, Al-Iskan, Al-Aziziyah Alsharqiya and Kudai. Sample of the study consisted of 100 patients chosen randomly from each respective centre (making a total of 500 participants) to measure patient satisfaction toward services provided and the quality impact. A pre-designed questionnaire was used, which contains 47 closed-ended questions and specific questions on socio-demographic information including age, gender, level of education, marital status and financial income. The ages ranged from 20-60 years old, and the data were collected from the individuals (293 males and

207 females) in the period from January 2019 to December 2019.

The questionnaire was divided into two sections, the first part concerned about the quality of primary care and the second part related to questions that assessed the impact of quality on patient satisfaction with public sector healthcare services. Both sections contain two domains that describe specific measuring tools. The patient satisfaction records combined with the level of health care (domain-1) and social-behavioural characteristics (domain-2). Whereas the quality of primary care described as terms of medical care (domain-3) and essential facility provided (domain-4), including both clinical and interpersonal aspects of care. The dependent variable in this study was assessed by asking the level to which patients were satisfied with the structure and process domains using five point-Likert Scale questions (rating points on the scale).

All the measuring tools were submitted to the quality panel to test the content validity and clarity. Then, questions modified according to the panel decision for assuring the clarity of the items. Furthermore, a pilot study was performed on 30 subjects to test the clarity of the contents and to examine the feasibility of the study. Later, the pilot sample excluded from the research, and new study samples were collected, determined and added to the study research. Collected data were coded and tabulated using a personal computer to permit the statistical analysis (descriptive statistics and correlation coefficient) by using SPSS program version 20. Chi-square is used to compare t-test and one-way analysis of variants (ANOVA) and the significant readings considered as P value less than 0.05.

Compliance with Ethical Standards and Budget:

This work was self-funded, and authors declared no conflicts of interest. Informed consents secured from all respondents who participated in the study. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee. The study received an ethical approval letter from the MOH-IRB with the reference number (H-02-K-076-2001-242).

3. Result:

Five hundred patients from five PHC centres were selected and interviewed to their satisfaction level with the services. Fifty-eight percent of the samples were males (293 individual), while the highest number of the aged groups were less than 30 years old. The second class comes with the group aged between 30-50 (34%). Previous investigations have shown that

female had the highest number of visits to PHCC with more than three quarters and was married (2;13;14).

Besides age and gender, other crucial categories, such as academic and educational status also considered in this study. Majority of the participants suited to the primary educational level (33%); nevertheless, only 15% of the targeted group have a high education level with the lowest proportion in the study. This finding is in concordance with other researches that showed low rates in a conversant group of the highly educated visitors(15;16). Several studies have shown that more than 50% of the PHCC visitors had high-income coverage per month. In contrast, the remaining participants had a middle range of the average class, and the minority of them claimed low

salary payments (2;13;14). As shown in Table 1, the vast majority of the subjects were married, with a monthly income of 10000 Saudi Riyals or more (52%). However, 35% of the participants had low-income range, while the remaining 25% of the visitors had an average level of financial between 5000-10000 Riayls/ month.

Table 1: Characteristics of participants.

The leading five items presented in bolds such as age, gender, education level, marital status and financial income. A total number of patients displayed under column N, while the representative proportion amount of the groups given in percentage. Abbreviation: SR, Saudi Riyal.

Demographic variables	N	%
Age in years		
Less than 30	180	36
30-45	170	34
45-50	125	25
More than 50	25	5
Gender		
Male	293	58.6
Female	207	41.4
Level of education		
Primary	165	33
Intermediate	150	30
Secondary	110	22
High education	75	15
Marital status		
Married	275	55
Not married	225	45
Economic level		
Low income (<5000 SR)	175	35
Average income (5000-10000 SR)	125	25
High income (>10000 SR)	200	40

Regarding the level of care (domain 1), explanatory variables were used in this study included tangible elements (Table 2). A total number of 23 questions, with the expectation or perception queries, were distributed to assess the level of health care. Results showed that patients were satisfied with 69.56% for doctors using computerized medical records in PHCCs and the lowest percentage with 4.2% were strongly disagree. Between 69-71% of the patients agreed about the proper working condition, transportation, appointment calls and the availability of necessary vaccine with clinical examination and treatments at the PHCC. On the other hand, 12-16% of the participants were kind off disagreed with the previously listed items, and less than 31% were not sure and did not know.

Also, laboratory results and information about the availability of services in the health care centres are provided to visitors with more than 72% of satisfaction. Particular facilities for disables or elderly patients considered as a good service agreement. Other services such as medical files, dental, asthma, maternal health clinic and radiology provisions elaborated the satisfaction rate (>70%) from patient perceptions. In contrast, less than 5.6% of the targeted group claimed strong disagreement (Table 2). Still, there are few undetermined questions with a certain aspect of the services reported that the clients faced poor experience with the waiting lists and had a problem in language communication (around 72%).

Twenty-three questions were used to assess the level of health care variable with the total value of the domain ranges from 23 – 115. Expected responses:

1 = strongly disagree; 2 = disagree; 3 = don't know; 4 = agree; 5 = strongly agree, were distributed and listed accordingly. Abbreviation: X^2 , measures how

expectations compare to actual observed data (or model results); Adj. P, adjusted p-value indicates significant differences (<0.05).

Table 2: Patient satisfaction with the level of health care.

		Patient satisfaction with the level of health care					% of agreement	Chi-square		
		Strongly disagree	Disagree	Don't Know	Agree	Strongly Agree		X^2	Adj. P-value	
1	Doctors use computerized medical records	N	21	70	158	151	100	69.56	131.060	1.48E-46
		%	4.2%	14.0%	31.6%	30.2%	20.0%			
2	The center's working hours are appropriate	N	24	56	157	174	89	69.92	165.580	2.16E-46
		%	4.8%	11.2%	31.4%	34.8%	17.8%			
3	The ease of transferring the patient from the center to the hospital	N	16	63	148	181	92	70.8	173.540	1.32E-45
		%	3.2%	12.6%	29.6%	36.2%	18.4%			
4	The center calls me if I cannot attend the follow-up appointment	N	24	52	138	189	97	71.32	174.540	7.80E-43
		%	4.8%	10.4%	27.6%	37.8%	19.4%			
5	The center provides all necessary vaccinations	N	23	63	139	186	89	70.2	163.360	2.02E-41
		%	4.6%	12.6%	27.8%	37.2%	17.8%			
6	All my family members are provided with a medical examination	N	21	52	154	186	87	70.64	190.260	2.02E-41
		%	4.2%	10.4%	30.8%	37.2%	17.4%			
7	There is an appropriate number of employees to perform all appropriate tasks on each visit	N	17	44	162	191	86	71.4	223.460	2.73E-39
		%	3.4%	8.8%	32.4%	38.2%	17.2%			
8	On every visit to the center, the temperature, weight and blood pressure are measured	N	16	40	142	214	88	72.72	255.600	1.24E-38
		%	3.2%	8.0%	28.4%	42.8%	17.6%			
9	The center provides a health education service that allows me to understand the disease, its treatment and prevention	N	17	49	148	200	86	71.56	219.900	1.35E-38
		%	3.4%	9.8%	29.6%	40.0%	17.2%			
10	The required medicine can be obtained from the center's pharmacy	N	26	43	127	221	83	71.68	243.840	3.15E-38
		%	5.2%	8.6%	25.4%	44.2%	16.6%			
11	I can get the results of the laboratory analyses at an appropriate time	N	23	44	132	200	101	72.48	200.900	3.35E-38
		%	4.6%	8.8%	26.4%	40.0%	20.2%			
12	I will be provided with information about the services available in the health center	N	16	53	141	190	100	72.2	190.460	1.39E-37
		%	3.2%	10.6%	28.2%	38.0%	20.0%			
13	I am confident that I can obtain the required primary health care services	N	14	45	148	212	81	72.04	256.300	3.79E-37
		%	2.8%	9.0%	29.6%	42.4%	16.2%			
14	Adequate / adequate care is provided to children	N	17	46	135	198	104	73.04	206.500	6.25E-37
		%	3.4%	9.2%	27.0%	39.6%	20.8%			
15	I am facing a problem in the language of communication with staff at the health center	N	23	43	144	200	90	71.64	212.140	9.58E-37
		%	4.6%	8.6%	28.8%	40.0%	18.0%			
16	My medical file is extracted on every visit	N	23	41	142	198	96	72.12	207.940	1.26E-36
		%	4.6%	8.2%	28.4%	39.6%	19.2%			
17	I have a bad previous experience	N	20	51	143	190	96	71.64	187.660	1.80E-36
		%	4.0%	10.2%	28.6%	38.0%	19.2%			
18	He had to wait too long to see a doctor	N	14	46	154	191	95	72.28	215.340	1.80E-36
		%	2.8%	9.2%	30.8%	38.2%	19.0%			
19	There are services that take into account people with special needs and the elderly	N	19	41	155	188	97	72.12	208.200	3.01E-36
		%	3.8%	8.2%	31.0%	37.6%	19.4%			
20	The dental clinic provides basic services. (Teeth cleaning, fillings, non-surgical dislocation, nerve removal, health education)	N	28	39	160	198	75	70.12	227.340	4.04E-36
		%	5.6%	7.8%	32.0%	39.6%	15.0%			
21	Pregnancy visits are regularly followed up by the pregnant clinic	N	17	58	163	169	93	70.52	174.320	8.22E-36
		%	3.4%	11.6%	32.6%	33.8%	18.6%			
22	Visits of patients with pressure, diabetes and asthma are monitored regularly	N	21	52	179	167	81	69.4	196.360	1.30E-35
		%	4.2%	10.4%	35.8%	33.4%	16.2%			
23	The center provides radiology services upon request by the doctor	N	14	61	170	162	93	70.36	177.100	5.18E-35
		%	2.8%	12.2%	34.0%	32.4%	18.6%			

Patient's decision on some social aspects was considered and determined in the next domain (D2). For example, listening to patient complaints and style of action towered serving them at PHCCs. About three-quarters of the patients (around 70%) reported that medical staffs treat them well, and the availability of time to hear complaints were acceptable and reasonable. Therefore, they feel some respect and more confident about their visit. Other aspects on the same domain showed relatively good responses from medical staffs toward relevant inquiries formed by patients (Table 3).

Twelve regular questions were used to assess patient satisfaction regarding social communications with the total value of the domain ranges from 12 – 60. Expected responses: 1 = strongly disagree; 2 = disagree; 3 = don't know; 4 = agree; 5 = strongly agree, were distributed and listed accordingly. Abbreviation: X^2 , measures how expectations compare to actual observed data (or model results); Adj. P, adjusted p-value indicates to significant differences (<0.05).

Table 3: Patient satisfaction records related to social and behavioral characteristics.

		Patient satisfaction records related to social and behavioural characteristics					% of agreement	Chi-square		
		Strongly disagree	Disagree	Don't Know	Agree	Strongly Agree		X ²	Adj. P-value	
1	What is your judgment on the quantity and quality of information that the doctor provided you with regard to the course of therapeutic analyze carried out?	N	21	103	143	157	76	66.56	119.240	7.10E-15
		%	4.2%	20.6%	28.6%	31.4%	15.2%			
2	What is your judgment about the availability of time for the doctor to hear you?	N	13	90	142	165	90	69.16	137.580	4.29E-14
		%	2.6%	18.0%	28.4%	33.0%	18.0%			
3	What is your judgment on the extent to which nurses have had time to hear you?	N	10	87	130	165	108	70.96	134.580	5.61E-14
		%	2.0%	17.4%	26.0%	33.0%	21.6%			
4	What is your judgment on the way doctors treat you during your visit to the center?	N	14	92	152	143	99	68.84	120.140	1.00E-13
		%	2.8%	18.4%	30.4%	28.6%	19.8%			
5	What is your judgment on the nurses' style towards you during your visit to the center?	N	16	115	121	148	100	68.04	100.260	1.10E-12
		%	3.2%	23.0%	24.2%	29.6%	20.0%			
6	Respecting rules and regulations such as (no smoking, calmness)?	N	12	93	141	156	98	69.4	126.140	1.00E-13
		%	2.4%	18.6%	28.2%	31.2%	19.6%			
7	What is your assessment of the extent to which doctors respect your customs and traditions?	N	14	101	133	147	105	70.09	107.200	1.11E-13
		%	2.8%	20.2%	26.6%	29.4%	21.0%			
8	How would you rate nurses' observance of your customs, customs and traditions?	N	14	93	128	152	113	70.28	111.020	1.18E-13
		%	2.8%	18.6%	25.6%	30.4%	22.6%			
9	Have you noticed a quick response from doctors to answer your inquiries?	N	14	84	146	149	107	70.04	122.180	1.26E-13
		%	2.8%	16.8%	29.2%	29.8%	21.4%			
10	Have you noticed a rapid response from nurses to answer your inquiries?	N	11	96	124	176	93	69.76	143.380	3.08E-12
		%	2.2%	19.2%	24.8%	35.2%	18.6%			
11	Overall, are you satisfied with the level of care your doctor gave?	N	15	96	137	160	92	68.72	122.740	1.27E-12
		%	3.0%	19.2%	27.4%	32.0%	18.4%			
12	Overall, are you satisfied with the level of care the nurse provided?	N	21	87	129	165	98	69.28	114.800	9.69E-12
		%	4.2%	17.4%	25.8%	33.0%	19.6%			

Moreover, results in the third domain (D3) showed that patients are moderately satisfied with the competencies of medical workers (doctors and nurses), 65.88% and 68% respectively. Furthermore, skills and professional capabilities showed to be rated more for doctors with 96.12%. Altogether, patient's records suggested a degree of disagreement on the pervious aspect with less than 16%, (Table 4).

Medical competence was spotted in the following table. Four fundamental questions were used to review

the skills and professional capabilities of the nurses and doctors with the total value of the domain range from 4 – 20. Expected responses: 1 = strongly disagree; 2 = disagree; 3 = don't know; 4 = agree; 5 = strongly agree, were distributed and listed accordingly. Abbreviation: X², measures how expectations compare to actual observed data (or model results); Adj. P, adjusted p-value indicates significant differences (<0.05).

Table 4: Quality of health care.

		Quality of health care					% of agreement	Chi-square		
		Strongly disagree	Disagree	Don't Know	Agree	Strongly Agree		X ²	Adj. P-value	
1	What is your judgment on the competencies of doctors?	N	18	78	198	151	55	65.88	214.380	4.89E-12
		%	3.6%	15.6%	39.6%	30.2%	11.0%			
2	What is your judgment on the competencies of the nursing?	N	19	60	180	156	85	69.12	179.220	5.26E-12
		%	3.8%	12.0%	36.0%	31.2%	17.0%			
3	What is your judgment on the treatment skills of doctors?	N	27	64	170	160	79	68	155.660	5.28E-12
		%	5.4%	12.8%	34.0%	32.0%	15.8%			
4	What is your judgment on the skills and professional capabilities of the nursing?	N	17	57	199	157	70	68.24	226.880	5.93E-12
		%	3.4%	11.4%	39.8%	31.4%	14.0%			

The quality of primary health care facility was evaluated in this study. For example, indoors cleaning areas (detection rooms, bathroom, waiting-section, corridors, floors, hallway, windows and doors), lighting system and some non-medical equipment also

examined in domain-4. The doors and windows have a metal edge and single glazing tablet (low-emissivity treatments) characterized by a luminous transmission feature. The percentage of the glaze surface with respect to the overall frame shell is about 20%. Only

windows are equipped with internal curtains which protecting the rooms from sunlight. Overall, the cleanliness of the centres, in general, showed to be scored by 67.64% and some visualized places have more than 69% record of patient's satisfaction. The percentage of disagreement for the measured variables in the same domain was less than 4.0% in total. Illumination and lighting system at the centres scored high satisfaction results (>70%) with the availability of comfortable seating areas and adequate portables, such as wheelchair and trolleys (Table 5).

Eight essential questions were used to evaluate the quality of the facility, including indoors cleaning areas, illumination and equipment. The total value of domain 4 ranges from 8 – 40. Expected responses: 1 = strongly disagree; 2 = disagree; 3 = don't know; 4 = agree; 5 = strongly agree, were distributed and listed accordingly. Abbreviation: X^2 , measures how expectations compare to actual observed data (or model results); Adj. P, adjusted p-value indicates to significant differences (<0.05).

Table 5: Quality of primary health care facility.

		Quality of the Facility					% of agreement	Chi-square	
		Strongly disagree	Disagree	Don't Know	Agree	Strongly Agree		X^2	P-value
1	What is your ruling on the cleanliness of the centre in general?	N 19 % 3.8%	92 18.4%	135 27.0%	187 37.4%	67 13.4%	67.64	165.080	1.58E-34
2	What is your ruling on the cleanliness of the bathrooms?	N 18 % 3.6%	69 13.8%	134 26.8%	204 40.8%	75 15.0%	69.96	202.820	5.18E-35
3	What is your ruling on the cleanliness of the detection room?	N 11 % 2.2%	69 13.8%	141 28.2%	206 41.2%	73 14.6%	70.44	225.280	1.96E-34
4	How did you find the equipment in the waiting area for the auditors and other facilities?	N 12 % 2.4%	60 12.0%	133 26.6%	215 43.0%	80 16.0%	71.64	240.580	9.27E-35
5	What is your ruling on the cleanliness of the corridors, hallway, walls and floors in general?	N 8 % 1.6%	65 13.0%	137 27.4%	206 41.2%	84 16.8%	71.72	225.500	6.67E-34
6	How did you find the illumination and lighting system in PHCC?	N 17 % 3.4%	62 12.4%	130 26.0%	228 45.6%	63 12.6%	70.32	269.860	5.96E-34
7	What is your ruling on cleaning of doors, windows and ventilation system?	N 13 % 2.6%	67 13.4%	139 27.8%	204 40.8%	77 15.4%	70.6	215.240	5.20E-34
8	How did you find the chair sets and portable in the waiting area?	N 16 % 3.2%	69 13.8%	135 27.0%	206 41.2%	74 14.8%	70.12	211.540	1.30E-35

It is surprising that an average of patient satisfaction about social and behavioral characteristics earned a high rate of satisfaction contrary to the common belief that clients are not satisfied with behavioral matters (Table 6). In addition, the majority of the participants claimed typical satisfaction of quality of health care with proportions 60.6%, high satisfaction scored 33.14% and the weak satisfaction

recorded by 6.0%. The same previous classification also ranked with the quality of the PHCC facility (Figure 1).

The total scored domains along with patient satisfaction were calculated and classified into three categories including weak level (less than 50%), average (50-70%) and high level of satisfaction (more than 70%).

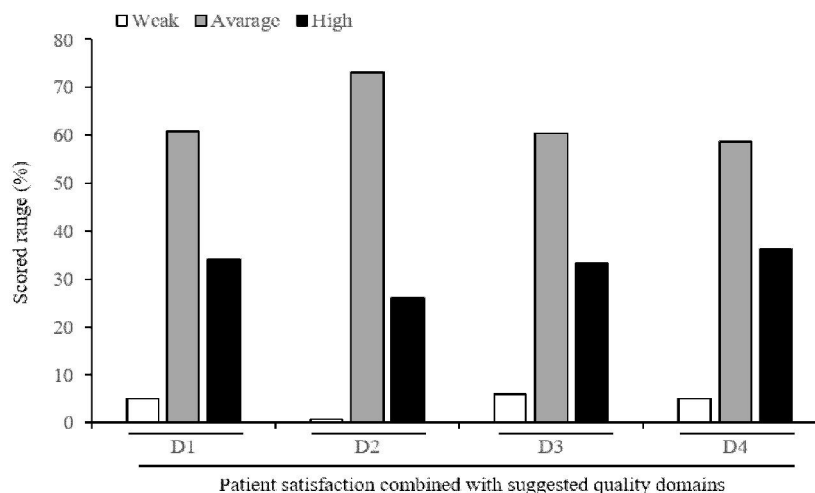


Figure 1: Classifying of patient satisfaction with a variety of health care quality aspects.

Table 6: Patient care improvement domains.

	Weak		Average		High		Score	
	N	%	N	%	N	%	Range	Mean±SD
Patient satisfaction about level of health care	25	5.0	305	61	170	34	50-102	81.988±8.381
Patients satisfaction about social and behavioral characteristics	4	0.8	366	73.2	130	26	28-57	41.50±5.738
Quality of health care	30	6.0	303	60.6	167	33.4	08-20	13.5620±2.208
Quality of the facility	25	5.0	293	58.6	182	36.4	17-37	28.122±4.263

Collected data were re-calculated and underlined as a weak (white bars), average (grey bars) and high (black bars) percentage score of satisfaction. All domains (D1, D2, D3 and D4) are evaluated accordingly to the satisfaction ranges. Domains are described as follow; domain-1 (level of health care), domain-2 (social-behavioural characteristics), domain-3 (quality of primary health care) and domain-4 (quality of the facility). The number of ranges that extended 70 are rated with high satisfaction, whereas number less than 50 highlighted as weak satisfaction. Between 50-70 ranged number are ranked as average patient satisfaction.

According to the results shown in Table 7, there is a significant correlation between patient satisfaction

with overall service quality. Among service quality dimension (level of health care), satisfaction with quality care had the highest correlation ($r = 0.77$, $P < 0.001$), and satisfaction (behavioral characteristics) with facility had the least correlation ($r = 0.74$, $P < 0.001$).

Determining the relationship between satisfaction with components of the quality of services (facility and health care) and patient information with behavioral characteristics. All were highly correlated ($p < 0.001$) with Pearson correlation coefficient of $r=0.771$ (D1 and D3), $r=0.719$ (D2 and D3), $r=0.746$ (D1 and D4), $r=0.746$ (D2 and D4). P-value indicates to the significant difference (<0.001).

Table 7: Correlation between the domains of service quality with satisfaction aspects.

Dimensions of Service Quality	Quality of health care (D3)		Quality of the Facility (D4)	
	Correlation coefficient	P-value	Correlation coefficient	P-value
Patient satisfaction about level of health care (D1)	0.771	<0.001	0.746	<0.001
Patients satisfaction about social and behavioral characteristics (D2)	0.719	<0.001	0.746	<0.001

Table 8 shows a strong association between the level of satisfaction and age group ($p < 0.001$). Surprisingly, gender showed no significant association related to satisfaction with the level of health care. This is in consistence with the findings indicated that some socio-demographic variables are not significantly related to consumers satisfaction (17). However, previous researches reported the influence of gender, especially females with the highest satisfaction level for health care (13;14). Whereas, marital status does not affect the level of patient satisfaction. However, patient satisfaction is affected by education and economic variables ($p < 0.001$). Those of high, secondary and primary school were satisfied as 94.56%, 88.46% and 81.44% respectively. Regarding the economic level, those with high income were most satisfied, followed by those with an average

salary. The least satisfied respondents about the level of health cares were the low-income groups, Figure (2).

Determining the relationship between patient satisfaction and evaluated health care system with socio-demographic data (age, gender, level of education, marital status, economic level). The four domains are listed with mean and standard deviation (SD) values. P-value indicates a significant difference (<0.001). Abbreviation: D1, (satisfaction about the level of health care); D2, (Patients satisfaction about social and behavioral characteristics); D3, (Quality of health care); D4, (Quality of the Facility); F, refer to the value measured from ANOVA test; while T, refer to t-test; NS, No significant. Asterisk (*) indicate significant differences with measured groups.

Table 8: Correlation between health care services and quality of care domains with measured satisfactions.

Variables		N	D1		D2		D3		D4	
			Mean±SD	P-value	Mean±SD	P-value	Mean±SD	P-value	Mean±SD	P-value
Age	Less than 30	180	72.87±3.54	1207.54 [†] ($<0.001^*$)	37.65±4.10	118.774 [†] ($<0.001^*$)	11.80±1.78	176.55 [†] ($<0.001^*$)	24.95±3.40	165.40 [†] ($<0.001^*$)
	30-45	170	82.85±2.76	NS	41.10±4.00	NS	13.62±1.08	NS	27.77±2.22	NS
	45-50	125	90.87±2.22	NS	45.95±4.59	NS	15.32±1.45	NS	32.06±2.95	NS
	Above 50	25	97.32±1.72	NS	49.76±7.15	NS	17.04±2.38	NS	33.64±4.76	NS
Gender	Male	293	82.05±8.37	0.211 [†] (0.833)	41.77±5.72	1.237 [†] (0.217)	13.63±2.19	0.83 [†] (0.402)	28.14±4.21	0.133 [†] (0.894)
	Female	207	81.89±8.40	NS	41.13±5.75	NS	13.46±2.20	NS	28.09±4.33	NS
Level of education	Primary	165	72.44±3.39	1480.1 [†] ($<0.001^*$)	37.43±4.04	119.103 [†] ($<0.001^*$)	11.70±1.78	173.871 [†] ($<0.001^*$)	24.81±3.46	163.53 [†] ($<0.001^*$)
	Intermediate	150	81.44±2.48	NS	40.75±4.03	NS	13.44±1.16	NS	27.27±2.03	NS
	Secondary	110	88.46±1.59	NS	44.13±4.16	NS	14.68±1.04	NS	31.03±2.60	NS
	High education	75	94.56±2.44	NS	48.13±5.87	NS	16.22±2.13	NS	32.82±4.09	NS
Marital status	Married	275	81.48±7.36	1480.1 [†] ($<0.001^*$)	41.40±5.23	-0.434 [†] (0.665)	13.42±1.95	-1.495 [†] (0.136)	28.26±4.01	0.832 [†] (0.406)
	Not married	225	82.60±9.45	NS	41.63±6.31	NS	13.72±2.46	NS	27.94±4.54	NS
Economic level	Low	175	72.72±3.48	1327.2 [†] ($<0.001^*$)	37.65±4.15	144.559 [†] ($<0.001^*$)	11.78±1.80	194.71 [†] ($<0.001^*$)	24.92±3.44	217.65 [†] ($<0.001^*$)
	Average	125	81.35±2.11	NS	40.41±3.63	NS	13.50±1.09	NS	27.15±1.88	NS
	High	200	90.49±3.79	NS	45.56±5.37	NS	15.15±1.79	NS	31.53±3.42	NS

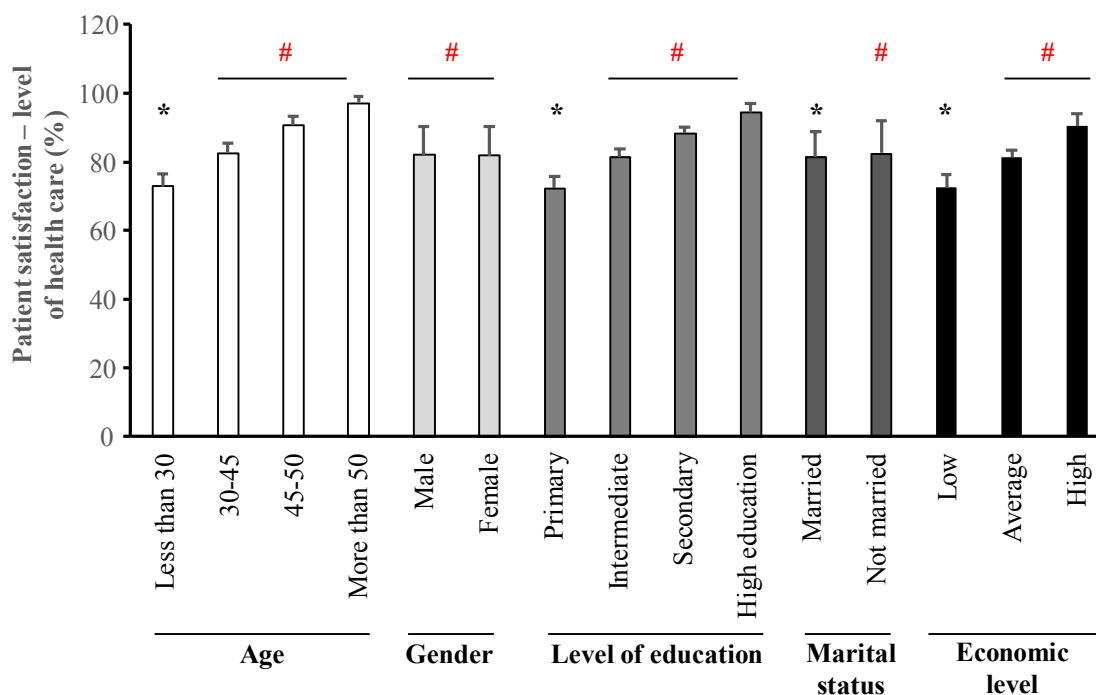


Figure 2: Distribution of the satisfaction level through health care services along with socio-demographic data. Five main variables are shown in the bottom of the graph and represent different measuring items (age, gender, education level, marital status and financial income). Each variable contains different items which demonstrate socio-demographic information. The four domains (D1, D2, D3 and D4) were used to evaluate the level of satisfaction with the quality of PHC services. Asterisk (*) indicate to significant differences with measured groups, whereas hash (#) designate no significance readings and colored in the red.

4. Discussion:

Patient satisfaction is a crucial tool measurement of health care system all around Europe, Asia and America (18;19). The comparison of patient satisfaction among thousands of participants from USA and UK shows that there is a considerable

difference between these two countries as well as between the provinces and sectors within one country (20). Limited study review on this topic makes it hard to compare present study findings. Our findings might be useful in identifying gaps in health care delivery at the PHCC level, especially in Makkah. Research

relating global satisfaction with patient response has revealed the presence of variation in determining patient satisfaction (21-24). The literature indicates that much of the remaining changes in health care satisfaction after correcting the key factors commonly applied to determine the concept is an indication of the patient experience. The overall patient satisfaction was found to be good, which is consistent with other researches conducted in different places in SA(4;13;15;17;25). Still, to what extent patient experience demonstrates satisfaction with the primary health care system are not fully understood, and further research is needed.

About two-thirds of the patients reported that the doctors use medical records in each care visits. This finding is in a slight agreement with a study conducted in SA and Kuwait (14;23). However, different comprehensive medical items were evaluated, which showed variation in satisfaction results with the use of electronic files by the medical staff. The most crucial factor that leads to patient's satisfaction is the appointments arrangement for the visitors of PHC and excellent handling. Our investigation indicated that three-quarter of the patients exceeded good experience with centre calls and follow up program at PHCCs. This finding is slightly different from other studies reported the difficulty in proceeding appointment schedule at PHC with 37% of agreement(13). The reason behind this on the other research could be related to the shortage in the human resources or due to the programming system for scheduling appointment that may require special applications and efforts.

In addition, other important variables, such as the proper working conditions and the availability of a necessary vaccine, were also evaluated in this study. Generally, more than 69% of the participants claimed an agreement with the transportation, vaccination, adequacy of staff and equipment, clinical examination and treatments provided at the health care centres. Part of the result is in line with the study showed that the respondents were most satisfied with the vaccination program and medical examination (2;13). In contrast, a study conducted in Riyadh city that showed a dissatisfaction of patients with the physical examination and adequacy of staff (2). There is a demand for continuing evaluation programs for professionals to sensitize them to their responsibilities toward health care services.

The consumer's satisfaction rate with provided services, such as laboratory results, medical files, dental, asthma, maternal health clinics and radiology provisions in this study is more than 70%. Although, other studies stated different variation aspects in the quality of the services at PHCCs(13;14;17). The differences in the satisfaction rate in these studies may

be real or maybe due to differences in population studied. Therefore, detailed questions with a particular aspect of the services need to be investigated in multicentre across the country. The critical social aspects were also considered in this study and ranked as moderate satisfaction level. Three-quarter of the clients claimed that medical staffs treated them well along with respecting the confidentiality and listing carefully to their complaints. However, 72% of the patients had a poor experience with waiting time and communication at PHC, which in general stated by several studies as well (2;17). The reason behind this may be due to the increasing number of patients visiting PHCCs or lack of specialized services, such as health education and awareness programs posted in the community.

In PHCCs, the visual missions are frequently very challenging. Consequently, the lighting should be functioning to ensure safety, efficiency and well-being of medical staffs and visitors, during the expansion of their activities (26;27). The lighting conditions, together with air micro-environment, can considerably affect the ability of the comfort and the attitude of the people (28). In this study, results have been measured lighting environment with ventilation in a narrowing area of customer satisfaction. However, extensive lighting measurements with air quality parameters are needed to evaluate the quality of services.

The influence of age and gender on the client satisfaction level varies. Previous studies showed that the older individuals are more satisfied with the health care system, while this study reported that the younger age groups are more confident with the services in PHCCs (4;25). Moreover, some other researchers deny the correlation between age and the level of satisfaction (13). Some studies argue that men are more satisfied, whereas some argue the opposite and other studies denied the association of gender with comfort(13;14;17;25;29).

The study showed that marital status also had no significant correlation to patient satisfaction with the level of health care. This finding contradicts a study conducted in Majmaah were widowed and divorced were more satisfied with the level of health care followed by the married (25). In addition, the latest satisfied respondents with health care services were reported to single individuals (30). The finding suggested that the respondents who acquired high education were more satisfied with the level of health care, followed by a secondary school. The low educated individuals were the least confident with health care. This finding is not in line with a study conducted in Majmaah city, Saudi Arabia and Al Ain city, United Arab Emirates(25;31).

Furthermore, the relationship between satisfaction and economic status is significant (p

<0.001). High-income individuals were more satisfied than those who had low economic levels. These results are not in agreement with other studies that represented a significant association of patient satisfaction with low income (25;29). The reason behind this could be due to patients are more confident with the visiting PHCCs. However, the fact that more study is required to clarify the reasons behind those changes.

Conclusion:

Analysis of the quality impact of health care services to the satisfaction of health care is the way to understand the expectations of patients and stakeholders better. The experience of the consumers about health care services significantly affects the achievement of the health care system. These inform health policy-makers, and health care providers with information should take into account when evaluating, monitoring and studying the health care services. The study identified that patients generally ranked positively the level of quality and general practice care in PHCCs with some aspects of clinical care need to be improved. However, further studies still needed to fully cover and recognize the involvement of other key factors that may contribute and influence patient satisfaction.

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