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Association between perceived health status and satisfaction with quality of care: evidence from users of primary health care in Oman

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Objective. Our aim was to assess the influence of perceived health status, as measured by SF-12, on the client's views of service quality.

Methods. A structured interview of patients was carried out in six primary health care centres in Adh Dhahira region health authority in the Sultanate of Oman. A total of 1226 patients aged 15 and over attending the different health care services within the health centres took part in the study. The main outcome measures were patients' satisfaction with the different aspects of health care and their perceived physical and mental health status.

Results. When adjusted for the relevant background factors such as age and gender, poor perceived health status has been found to predict less positive judgements of various aspects of health care quality. Poor mental health status, for example, predicts less positive judgements of aspects that are linked to the accessibility of the service and interpersonal aspects of care such as the working hours of the centre, GP's attitude and time spent with the GP ($P < 0.05$, <0.05 and <0.01, respectively). Poor physical health status, on the other hand, predicts less positive judgements of aspects such as cleanliness of the building, confidentiality of consultation with the GP, explanation about the visit to the antenatal clinic and standard of antenatal clinic in general ($P < 0.05$, <0.05, <0.05 and <0.05, respectively).

Conclusion. Users' perceived health status has to be evaluated concurrently with assessing satisfaction with the quality of health care services. This would provide more valid results with regard to the patients' views on their level of satisfaction with health care quality.

Keywords. Oman, patient satisfaction, perceived health status, primary care, quality.

Introduction

It has been claimed that patients' views should be sought in order to improve the responsiveness of health care to their needs.[1] However, it is important to know which factors play a role in determining whether a patient's judgement of the medical care received is positive or negative. This would help health care providers and planners to focus their changes on these factors. Perceived health status may be one of these factors. Therefore, it may be important to consider pre-existing differences in health when making inferences about the level of quality through evaluating patients' satisfaction.

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This relationship has been investigated by many researchers, some of whom have reported that there is no significant correlation between patients' perceived health status and their satisfaction with health care.[2–5] In contrast, many other researchers reported that patients who perceive their health status to be poor were less satisfied with their medical care.[1, 6–15]

Despite the number of studies in favour of the correlation between health status and satisfaction, there is still no understanding of why sicker patients are less satisfied with health care. In addition, the causal process underlying this relationship is not clear. One possibility is that dissatisfaction has a negative impact on health.[16–18] However, it has been shown that there is no evidence to prove that satisfaction with specific aspects of health care contributes independently to either mental or physical health status.[19,20]

In contrast, support for assuming that health status is a causal determinant of satisfaction with medical care

has been found by a number of researchers.[13,19,21–23] As a result, two hypotheses have been proposed to explain the negative impact of poor health on satisfaction. The first of these assumes that poor health may reduce satisfaction directly to the effect that negative satisfaction may be associated with care providers as well as other aspects of life.[3] Thus, it has been claimed that the positive association between patient satisfaction and health status is more likely to represent a tendency among healthier patients to report greater satisfaction with health care, rather than a tendency among patients who improve following interaction with the health care system to report greater satisfaction.[22,23]

The second hypothesis is labelled the 'physician mediation hypothesis', which proposes that physicians react to sicker patients in a way that produces lower levels of satisfaction.[7,19,25,26] One explanation for this hypothesis is that sicker patients may be physically and emotionally unrewarding, since the patient may have poor hygiene, may be irritable and unresponsive, or may behave erratically or unappreciatively. Thus, physicians sometimes find difficult cases to be upsetting and frustrating, especially if diagnosis or effective treatment is not helping the patient. In addition, physicians may have negative feelings about certain groups of patients, such as drug addicts or smokers.

However, a few issues have to be considered when evaluating the association between health status and satisfaction. On the one hand, health status and satisfaction are not regarded as a unitary concept, rather as a multidimensional construct.[15,27,28,36] Thus, the multidimensional approach is important since the effect on the patient's judgement of different aspects of care may vary according to different aspects of health status, either physical or mental.[11,20,29,30] On the other hand, association between health status and satisfaction is better assessed after the control of other confounding factors such as age.[28] This would help to assess the independent effect of perceived health status on satisfaction.

Methods

Study setting

The study was carried out in the Adh Dhahira region, in the north-west of Oman. This region has borders with Saudi Arabia and the United Arab Emirates to the west. Administratively, the region is divided into five districts (Wilayats, i.e. administrative districts which roughly correspond to local/town councils in the UK) with a total population of 214 997.[31] It is ~300 km from the capital, Muscat, and is connected with the rest of Oman by two main, tarred roads.

Primary health care services are provided by 12 health centres and three local hospitals distributed across the region. In addition, two out-patient departments in the referral hospitals at Ibri and Buraimi provide primary health care. Six primary health care centres were chosen purposefully for the study. This was because these centres provide a full package of primary health care services as prescribed by the Ministry of Health (MoH); they serve a large number of patients; and they cover the three types of communities within the region (rural, semi-urban and urban).

One centre was chosen from each Wilayat, with the exception of Ibri where two centres were selected in view of the dense population and the greater number of health centres. Each centre covers a catchment area with a number of villages ranging from 15 to 42, with a maximum distance of 90 km from the centre. The services provided include: general practice, antenatal, postnatal, birth spacing, children's immunization and growth monitoring, and health education. These are supported by a medical recording system, laboratories and pharmacies.

Data collection instruments

Two questionnaires were used in this survey: the satisfaction and the perceived health status questionnaires (see Supplementary material available at *Family Practice* Online). The satisfaction questionnaire used in the survey was developed from another instrument used by al-Qatari in the Saudi Arabian health community.[32] It was assumed that this instrument could be applied to the Omani community, as both countries are part of the Gulf area and share similar social and cultural features. The questionnaire assessed users' satisfaction with the structure of the health centre (eight items) and its waiting area (nine items). Satisfaction with the process of care was evaluated for six services, including the work of the records clerk (two items), the GP (11 items), antenatal care (four items), immunization and growth monitoring (four items), drug dispensing (three items) and the laboratory service (three items). For each service, satisfaction level with the interpersonal and technical aspects of care was evaluated. Personal details of the respondents, such as age and level of education, and the pattern of health centre use were also obtained.

A 5-point Likert scale was used, with answers ranging from totally dissatisfied to very satisfied. An open-ended question was given at the end of the questionnaire to provide respondents with the opportunity to present issues not covered by the questionnaire.

The patients' perceived health status was assessed using the Short Form-12 health status instrument (SF-12) developed by the Medical Outcomes Trust in Boston.[33] It has been translated into different languages, not including Arabic, and has been tested in different communities. It is used to assess people's perceived general health status through 12 questions which assess eight dimensions of health: (i) physical functioning; (ii) physical role; (iii) bodily pain; (iv) general health; (v) vitality; (vi) social functioning; (vii) emotional role; and (viii) mental health. The response options ranged from

a 2-point scale of 'Yes/No' to a 6-point scale of 'none of the time' to 'all of the time'. Two scores were given for each option, after which all the scores were added up to give two measures of health status including the physical component summary (PCS) and the mental component summary (MCS).

The questionnaires were translated by a specialist in translating from English to Arabic. A further specialist, who had not seen the original questionnaires, was then asked to translate back from the Arabic to English. This later translation was compared with the original copy to see if any differences had arisen. None were found.

Sample size

The sample size was calculated using the Statcalc. in Epi Info. 6 program. As no previous data are available regarding user satisfaction rates in Oman, a dissatisfaction rate of 15% for the patients was assumed, and a ±5% selected 95% confidence level. The number of patients to be interviewed from each centre was calculated based on the total number of the users of that centre (see Table 1). The number of patients chosen from each service was also in proportion to the number of patients attending that service in 1998 (see Table 2).

TABLE 1 *Sample size of patients to be recruited from each health centre*

Health centre	Total number of users (1998)	Sample size	No. of patients interviewed
Ibri	20 052	194	248
Muqinyate	12 106	193	220
Dhank	16 085	194	211
Yanqul	36 023	195	297
Wadi al Gizi	6262	190	133
Mahdah	4574	188	117
Total	95 102	1154	1226

Sampling methodology

One month was spent in each health centre and interviews were carried out 5 days a week during official working hours (7.00–14.00 h). The days were allocated randomly for each service during all 4 weeks. However, in two health centres, an antenatal care service was provided on only 1 day of the week. Therefore, that day was chosen to interview patients attending that service. Out of the 5 days, two were allocated for the general practice clinic, one was for those patients who attended the clinic and were given prescriptions, while the other day was for those given a laboratory request. For the immunization and growth monitoring services, 2 days were allocated and patients were asked to report satisfaction with both services. These services were provided by the same nurse.

It was decided to interview patients over 15 years of age. In cases where patients were younger than 15, interviews were carried out with the patient's companion. It was decided to exclude any patients below the age of 15 who had come to the health centre without a companion.

Patients using the general practice and anenatal clinics were recruited by systematic random sampling. The records clerks and staff nurses were responsible for recruiting patients. They were given written instructions on how to choose patients and what to tell them. Then, if the patients agreed to the interview, they were asked to meet the interviewers, who explained more about its aims and assured them about the confidentiality of any data collected. The interviewers then started the entry

TABLE 2 *Sample size of patients for interview and number of them seen from each health centre*

Health centre	Type of service					
	GP		Antenatal care		Immunization and growth mentoring	
	Sample size	Patients seen	Sample size	Patients seen	Sample size	Patients seen
Ibri	152	125	16	73	26	50
Muqinyate	154	101	24	66	15	54
Dhank	153	97	16	57	25	57
Yanqul	158	143	20	78	17	76
Wadi al Gizi	152	80	16	27	22	26
Mahdah	154	82	7	18	27	17
Total	923	628	99	319	132	280

interview, asking patients about personal details, the characteristics of the visit and the frequency of their health centre use. Immunization and growth monitoring services are provided 24 h a day, 7 days a week, which reduced the number of visitors for this service during the survey time. Therefore, all mothers bringing their children for immunization and growth monitoring on that date were included.

Interviewers' training and pilot study

Twelve female volunteers from the community were chosen and a training course was conducted to allow interviewers the opportunity to become used to the questions and to learn the basics of conducting an interview. This training was supervised by the first author. A pilot study was carried out in a health centre that was not included in the main study. This study was as a miniature version of the full-scale survey, reflecting its important features and organizational procedures. The data were quality controlled in the field.

Analysis

The manner of data analysis was as follows:

- Satisfaction frequency rates were calculated to show the number of patients in each of the five satisfaction level categories. It was found that the number of respondents in satisfaction level categories 1 and 5 was very small. Therefore, category 1 was merged with category 2 so as to include all those who were dissatisfied in some way. Similarly, category 5 was merged with category 4 in order to include all those who were satisfied in some way. These categories were then recoded into 0 = dissatisfied; 1 = satisfied; 9 = uncertain.
- A component summary score for each patient was calculated for the physical (PCS) and the mental (MCS) health status component summary scale using the following formula:
  Component summary score = the sum of scores for the 12 questions.
- The norm-based standardized physical (PCS-12) and mental (MCS-12) scores were then calculated using the following formula:
  Norm-based standardized score = component summary score + constant.
  (The constant for the physical scale = 56.57706, and for the mental scale = 60.75781).
- These scores were then grouped into five categories (from 1 to 5), with group 1 representing those with the lowest health status score and group 5 representing those with the highest health status score.
- A chi-square test was calculated to assess the association between the perceived physical (PCS-12) and mental (MCS-12) health status of respondents and their satisfaction with the different aspects of health care quality.
- After controlling for confounding factors such as age and education, the logistic regression coefficient was calculated to assess the influence of perceived health status on level of satisfaction with the different aspects of health care quality. This was calculated using the PCS-12 and MCS-12.

Data analysis was done using the SPSS program.

Results

Characteristics of the respondents

The mean age of the respondents was 31.5 years (SD 11.98). As shown in Table 3, most of the patients interviewed were between the ages of 25 and 44 years. In addition, most of them were married, literate and had attended the health centre more than once during the month preceding the interview.

Association between perceived health status and satisfaction with the 'structure' of the health centre and waiting area

As shown in Table 4, the chi-square test revealed that the perceived mental health status of the respondents was associated with only one aspect of the health centre structure compared with seven aspects for the structure of the waiting area. For all of these aspects, it was observed that as the perceived health status score increases, the level of satisfaction also increases. For example, an increase in the mental health status score was associated with an increase in the levels of satisfaction with privacy in the waiting area (see Fig. 1).

In contrast, the perceived physical health status was not found to be associated with any aspects of the

TABLE 3 *Descriptive statistics of the study population*

Socio-demographic variables	Category	Patient survey (n = 1226)	
		%	n
Age (years)	15–24	33.2	407
	25–34	32.6	400
	35–44	19.4	238
	>44	14.8	181
Education	Illiterate	37	454
	Literate	63	772
Marital status	Married	88	1079
	Single	12	147
Frequency of use/month	0	24.4	299
	1	36.6	449
	>1	39	478
Frequency of use/year	1–5	42.3	519
	6–10	29.9	366
	>10	27.8	341

TABLE 4 *Association between patient's perceived health status and satisfaction with the 'structure' of the health centre and waiting area*

Aspect	PCS-12 *P*-value	MCS-12 *P*-value	Description of the association
Staffing of the health center	NS	<0.05	Satisfaction increases as MCS score increases
Waiting time	<0.01	NS	Satisfaction increases as PCS score increases
Location of the WA	NS	<0.01	Satisfaction increases as MCS score increases
Space in the WA	NS	<0.01	Satisfaction increases as MCS score increases
Furniture in the WA	NS	<0.05	Satisfaction increases as MCS score increases
Tidiness of the WA	NS	<0.01	Satisfaction increases as MCS score increases
Cleanliness of the WA	NS	<0.05	Satisfaction increases as MCS score increases
Privacy in the WA	NS	<0.01	Satisfaction increases as MCS score increases
Availability of public toilets	NS	<0.05	Satisfaction increases as MCS score increases

PCS-12 = norm-based standardized physical health status; MCS-12 = norm-based standardized mental health status; WA = waiting area; NS = not significant.

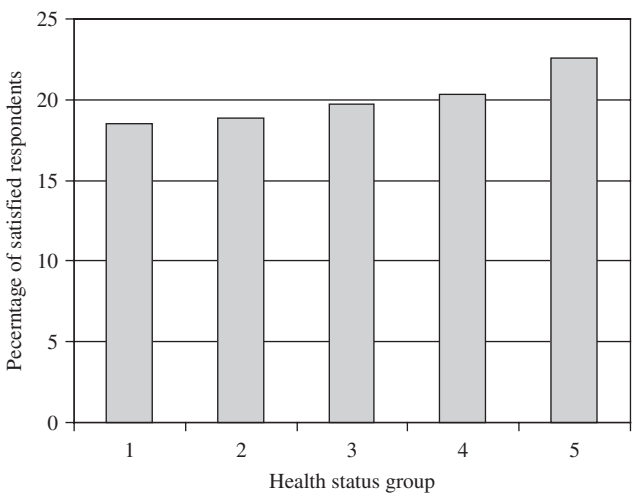

FIGURE 1 *Association between the perceived mental health status and satisfaction with the privacy of the waiting area*

structure component. However, a significant association was found to exist with regard to the time spent waiting within the health centre. Considering the satisfaction levels for the five health status groups, it was found that 21% of the respondents from group 1 reported satisfaction with the waiting time compared with 28% of the respondents from group 5.

After controlling for confounding factors such as age, gender and education, it was found that perceived health status had an independent influence upon satisfaction levels with the structure of the health centre and the waiting area. On the one hand, perceived health status was found to have an independent influence upon satisfaction with regard to only three aspects of the structure of the health centre (see Table 5). On the other hand, with regard to assessing satisfaction with the structure of the waiting area, logistic regression analysis showed that the perceived physical health status independently influences the levels of satisfaction for three out of the nine aspects. These were the location of the waiting area, cleanliness and the availability of public toilets (see Table 5). For example, a one-unit increase in the perceived physical health status score was associated with a 3.0% increase in the likelihood of being satisfied with the location of the waiting area. In contrast, perceived mental health status was found to be independently associated with levels of satisfaction for four out of nine aspects: space in the waiting area, tidiness, cleanliness and privacy within the area.

Association between the perceived health status and satisfaction with the 'process' of health care services

Table 6 shows the results of association between health status and satisfaction by using the chi-square test. It was found that perceived health status was only associated with three aspects of the process of the different services. For example, there was a significant relationship between the perceived mental health status score and satisfaction with the explanations given by the pharmacist concerning drug usage. Those respondents who achieved a high score in terms of perceived mental health status reported higher levels of satisfaction. For example, 25% of respondents from group 1 reported satisfaction with the explanations given by the GP concerning diagnosis, while 27.5% of respondents from group 5 reported satisfaction with the same aspect.

However, logistic regression analysis has shown that perceived health status has an independent influence only on levels of satisfaction with the process of services provided by the GP and the antenatal care doctor (see Table 7). Perceived physical health status was found independently to influence levels of satisfaction with the GP's regard for confidentiality, the explanations given about the antenatal care visit and the general standards of antenatal care of the antenatal service. For example, a one-unit increase in the score of perceived physical health status was associated with a 4.0% increase in the likelihood of being satisfied with the explanations given concerning the results of the antenatal care visit.

The perceived mental health status was found independently to influence levels of satisfaction with those aspects of health care that were related only to the GP, namely the practitioner's attitude, the time spent with the patient and the questions asked. For example, a one-unit increase in the score of the perceived mental health status score was associated with a 4.5% increase in the likelihood of being satisfied with the attitude of the GP.

TABLE 5 *Odds ratio from the logistic regression for predicting the level of satisfaction with the structure of the health centre and the waiting area*

Independent variable	Cleanliness of the health centre		Staffing of the health centre		Working hours	
	OR (95% CI)	*P*-value	OR (95% CI)	*P*-value	OR (95% CI)	*P*-value
PCS-12	1.028 (1.002–1.055)	0.038	–	NS	–	NS
MCS-12	–	NS	1.019 (1.002–1.035)	0.027	1.028 (1.004–1.052)	0.020
	Location of the WA		Space in the WA		Tidiness of the WA	
	OR (95% CI)	*P*-value	OR (95% CI)	*P*-value	OR (95% CI)	*P*-value
PCS-12	1.030 (1.007–1.054)	0.012	–	NS	—	NS
MCS-12	–	NS	1.025 (1.012–1.039)	0.000	1.032 (1.011–1.483)	0.003
	Cleanliness of the WA		Privacy in the WA		Availability of public toilets	
	OR (95% CI)	*P*-value	OR (95% CI)	*P*-value	OR (95% CI)	*P*-value
PCS-12	1.035 (1.009–1.061)	0.008	–	NS	1.023 (1.007–1.039)	0.005
MCS-12	1.029 (1.008–1.050)	0.007	1.021 (1.008–1.035)	0.001	–	NS

OR = odds ratio; NS = not significant.

TABLE 6 *Association between patient's perceived health status and satisfaction with the 'process' of health care services*

Aspect	PCS-12 *P*-value	MCS-12 *P*-value	Description of the association
Explanation given diagnosis made	<0.05	NS	Satisfaction increases as PCS about the score increases
Standard of antenatal care in general	<0.05	NS	Satisfaction increases as PCS score increases
Explanation about drug use	NS	<0.05	Satisfaction increases as MCS score increases

PCS-12 = norm-based standardized physical health status; MCS-12 = norm-based standardized mental health status; NS = not significant.

Discussion

In connection with using user-satisfaction surveys as a method for assessing health care quality, several determinant factors which were found to have an effect on the ratings of users should be taken into consideration.[2,5,34] Perceived health status is one of the factors which was found to be positively associated with satisfaction with the quality of health care.[6–8,12,14,35]

Perceived health status and satisfaction with the structure of the health centres

As shown above, the results of this survey revealed that a positive association exists between health status and satisfaction with several aspects of health centres and their waiting area structures. Interestingly, the association remains for some aspects of care (staffing of health centre), after controlling for factors such as age and gender, while for other aspects, such as furniture in the waiting area, no association was revealed. Mental health status (MCS-12) is found to be associated with more aspects when compared with physical health status (PCS-12). Such findings are similar to those revealed by other studies in which a strong association has been found between mental health status and satisfaction with the quality of health care.[11,20,28,30] Links with physical health status, however, have been found to be weak. In the current study, for example, it was found that mental, but not physical health status is positively associated with the number of staff in the health centre. This finding could be explained by the fact that people who perceive their mental health to be poor would appreciate an adequate number of staff being available in the health centre. This, in turn, may be linked to the fact that members of staff have enough time to spend talking to the patients on a social level. Since this might indirectly involve attending to the patient's psychosocial needs, it is likely to result in improved satisfaction with this aspect of care. It would, nevertheless, be difficult to

TABLE 7 *Odds ratio from the logistic regression for predicting the level of satisfaction with the process of health care services*

Independent variable	GP attitude		Time spent with the GP		Questions asked by the GP	
	OR (95% CI)	*P*-value	OR (95% CI)	*P*-value	OR (95% CI)	*P*-value
PCS-12	–	NS	–	NS	–	NS
MCS-12	1.045 (1.001–1.091)	0.046	1.046 (1.012–1.081)	0.007	1.038 (1.009–1.067	0.01
	Confidentiality of consultation		Explanation about the visit to the antenatal care doctor		Standard of antenatal care in general	
	OR (95% CI)	*P*-value	OR (95% CI)	*P*-value	OR (95% CI)	*P*-value
PCS-12	1.0403(1.005–1.082)	0.024	1.040 (1.004–1.077)	0.031	1.089 (1.015–1.169)	0.018
MCS-12	–	NS	–	NS	–	NS

OR = odds ratio; NS = not significant.

obtain improvement in satisfaction levels if health centres were faced with severe staff shortages. Furthermore, it was found that there is an association between MCS-12 and privacy within the waiting area. This association could be explained by the fact that people with poor mental health status might look for a place to sit where they will not be disturbed. As some waiting areas are not well equipped in terms of privacy (i.e. some are for both male and female patients), this could be cited as one reason why patients with low mental health scores were less positive about this aspect of care.

Interestingly, the findings reported by some studies concerning the association between health status and the structure of the health centre were different from those reported in this study. For example, one study has revealed that judgements about the premises and the availability of emergency services were not determined by health status.[1] It can be argued, however, that the study carried out by Wensing *et al*. has evaluated only the overall level of satisfaction with the premises without considering the different aspects of the structural component of the health care facility (i.e. staff and technical facilities). This goes against those recommendations which, in suggesting that overall measures of satisfaction are of limited use, propose examination of the specific aspects of this multi-dimensional construct.[15,28,36]

Perceived health status and satisfaction with the process of health care services

As shown in Table 6, by using the chi-square test, perceived health status was only associated with three aspects. However, the results of logistic regression reveal that there is a positive association between MCS-12 and three aspects of satisfaction with the GP (GP's attitude, time spent with the GP and questions asked by the GP). This could be explained by the fact that patients who consider their mental health to be poor would aim for better interpersonal interaction with the GP. This is linked to the doctor's attitude. Furthermore, these patients might feel they need to spend more time with the physician discussing problems which bother them. They aim to be asked in detail about their health problems. Such findings could be linked to those reported in a study which showed that patients who admit personal problems to the physician, but do not discuss them, are significantly less satisfied with the humane aspect of the staff.[7] Similarly, Ross and colleagues[37] have shown that the health status of patients who gave high priority to the interpersonal aspects of care was worse than the health status of other patients. This was particularly noticeable with regard to psychological health. It can be assumed, therefore, that the interpersonal aspect of care is an important factor in delivering good quality care, particularly among people who perceive their mental health to be poor. In connection with the finding that mental health status is associated with the number of staff in a health centre, it can be claimed that providing more staff leads to an increase in the time spent with the patient. Thus, there is more time for patients to discuss matters of concern. This, in turn, leads indirectly to an increase in levels of satisfaction with the time spent in consultation with the GP.

In contrast, no association was found between MCS-12 and other aspects of the GP's consultation, such as explanations about the diagnosis or actions taken. Such findings appear to be inconsistent with those reported in the study of Wensing *et al*.[1] Here, it was revealed that patients with poor mental health status evaluated the level of counselling and advice given by the physician less positively. Similarly, findings of Hermann *et al*.[24] have revealed that disabled patients with psychiatric disorders reported lower levels of satisfaction with the health information they received from their physicians. It could be argued that since such studies were carried out with disabled patients suffering from chronic psychiatric and medical problems (asthma and diabetes), the

findings might not be applicable to those patients using primary health care clinics which offer a variety of services including immunization and antenatal care clinics.

Interestingly, using logistic regression analysis, PCS-12 was found to have a positive correlation with only one aspect of GP care (confidentiality of the GP's consultation). This could be explained by the fact that patients who consider their physical health status as poor might suffer from health problems (such as hypertension or diabetes) which they do not want others to know about. Thus, any breach of confidentiality may result in low levels of satisfaction with such aspects of care. Physical health status was also found to have a positive association with the explanations given by the doctor regarding the results of the antenatal clinic visit and the general standards of antenatal care. These findings could be explained by the fact that patients using the antenatal clinic may be physically distressed as a result of the physiological changes of pregnancy. As such, they may be concerned about the progress of their pregnancy. Consequently, they expect the antenatal clinic doctor to thoroughly explain the results of the visit and the progress of their pregnancy. Such findings are, nevertheless, inconsistent with those reported by Kaldenberg[30] who revealed that, among obstetric and gynaecological patients, there was no significant relationship between health status scores and patient satisfaction. It can be argued that the study by Kaldenberg was carried out with hospital patients who may have different characteristics from those using a primary health care centre. Furthermore, the study did not assess levels of satisfaction with the specific aspects of the antenatal service such as an explanation of the results of the visit. Thus, it could be claimed that the findings might not reflect the actual level of satisfaction with this service. Finally, the number of patients involved was too small (80 patients) to draw useful conclusions about the relationship between health status and satisfaction.

It is important to note one limitation of this research, i.e. that the data were from users of primary health care services. As such, the results may not be generalizable to users of secondary or tertiary health care services. However, unlike previous studies that assessed the relationship between health status and a single domain of satisfaction, this study assessed the effects of physical and mental health on various aspects of satisfaction. Thus, despite the above-mentioned limitation, this study provided a comprehensive assessment of the association between perceived health status and satisfaction with health care. Furthermore, it has shown the importance of employing logistic regression analysis in order to assess the independent effect of health status on satisfaction.

Conclusion

It has been shown that the respondents' perceived health status has a role to play in modifying levels of satisfaction with many aspects of health care quality. Therefore, it can be recommended that data collection for the purpose of quality evaluation of primary health care through patient satisfaction surveys needs to occur concurrently with evaluation of their perceived health status. This would help to identify those who already perceive their health to be poor and, as a result, greater attention could be paid to those aspects which are important to them. This in turn might encourage them to use the service as and when required. Also, it means that case mix is better considered in any study which aims to evaluate levels of user satisfaction with a health care service, which ultimately would help to provide more valid results. Furthermore, specific measures of health status and satisfaction, instead of general measures, should be employed. This would help to understand the relationship between perceived health status and the various aspects of satisfaction and to obtain a comprehensive picture. In addition, correlations between perceived health status and satisfaction became more noticeable after controlling for the effect of confounding factors, which exerted an influence upon levels of satisfaction, such as the age of respondents. Thus, it is recommended that assessing such a correlation is better done by using logistic regression analysis. This would help to assess the independent effect of health status on satisfaction, thus, giving a more reliable assessment of the correlation. Finally, is the role perceived health status plays on satisfaction 'causal'? Satisfaction does increase across a number of quality issues as perceived health status increases. Also, the perceived health status was measured before satisfaction was assessed and before patients received the service. Therefore, the time order and the statistical association criteria for causality are fulfilled.

Declaration

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