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The negative gap in quality of elderly healthcare in the West of Iran in 2020; an analytical cross-sectional study

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Abstract

Introduction: Immune system dysfunction in old age leads to infectious diseases, autoimmunity and a high prevalence of various cancers in the elderly. Assessing the quality of services provided to the elderly and identifying its strengths and weaknesses can help improve elderly health and increase the quality of life-related to health.
Objectives: We aimed to assess the quality gap in an integrated healthcare program for the Iranian elderly.
Participants and Methods: This cross-sectional study was conducted on 701 elderly individuals aged over 60 years in Hamadan by stratified random sampling. Interviewers visited the selected centers on random days of the week and completed the SERVQUAL questionnaire. Data were analyzed by Stata 13, using ANOVA and a multiple linear regression model at a 95% confidence interval.
Results: The mean age of the participants was 68.38 ± 6.90 years and the majority of them were women (59.63%). The mean of expected quality was higher regarding all the dimensions compared to the mean of perceived quality ($P < 0.001$). In addition, women had higher expectations of quality services than men (4.13 versus 4.12) ($P = 0.390$). Compared to the urban elderly, the rural elderly had a higher mean of perceived service quality score (0.12), which was statistically significant ($P = 0.003$).
Conclusion: The results indicated a negative gap between the mean of expected quality and the mean of perceived quality. This gap was greater in terms of access to expected needs. Thus, paying attention to the unmet needs of the elderly should be a priority for health policymakers.

Introduction

Aging occurs along with many biological changes; however, one of the critical changes in this period is the dysfunction of the immune system. During this period, some aspects are preserved and some others are lost (1). These changes are due to hormonal changes throughout life, increased free radicals and the accumulation of antigens. Age-related disorders in some aspects of immune function are associated with an increased prevalence of respiratory and autoimmune diseases, fatal bacterial diseases and viral infections (2). For instance, in several studies, the COVID-19 mortality rate has been shown to increase exponentially with age (3,4). Additionally, due to the accumulation of mutations throughout life, the incidence and prevalence of cancers increase with age; therefore, as the elderly population increases worldwide, cancer

Key point
• Compared to the urban elderly, the rural elderly had a higher mean of perceived service quality score.
• The results showed a negative gap between the mean of expected quality and that of perceived quality.
• The gap was greater in terms of access to expected needs.
• Paying attention to the unmet needs of the elderly should be a priority for health policymakers.

deaths rise (5,6).

Based on WHO global statistics, the total number of elderly worldwide was approximately one billion in 2019 and is expected to reach two billion by 2050, dramatically residing in developing countries (7). The Sustainable Development Goals (SDGs) approved by the United Nations in 2015 underscore providing a healthy life and promoting wellbeing for all ages (8).

Accordingly, one of Iran's new primary healthcare (PHC) services is the integrated care program for the elderly. Incorporating elderly care into PHC might be effective in preventing communicable and non-communicable diseases, screening, improving health and improving the quality of life of the elderly. Thus, its quality should be taken into serious consideration. The UK National Health Service defines the quality of healthcare services as "providing the right services to the right people, at the right time, in the right and practical way, within the average capacity of the people in the community and in a human way" (9). Therefore, if the system's goal is to deliver quality services, fulfilling the expectations and needs of service recipients is the first step in this regard.

The Service Quality (SERVQUAL) model is a well-known tool for assessing the gap between service recipients' perceptions and expectations. The SERVQUAL model which is presented by Parasuraman et al, is a diagnostic method for identifying strengths and weaknesses of an organization's service quality. The model is employed to measure and compare extra-organizational customers' expectations and perceptions in six dimensions; tangibility, reliability, responsiveness, assurance, empathy and access (10).

Objectives
Comparing perceptions and expectations of care service quality recipients can clarify the gap between the current status and the ideal situation. In this regard, health policymakers can identify the real needs of the elderly. This study aimed to evaluate the quality of services provided to the elderly in an integrated care program in Hamadan province, Iran, based on the SERVQUAL model.

Participants and Methods
This cross-sectional study was conducted on 701 individuals in 2020 by considering a 50% gap in the quality of provided health services and a 95% confidence interval. A randomized multistage sampling was applied. Based on the total elderly population of each county, the entire sample was collected from nine counties. Then, based on the sample size of each county and using a table of random numbers (from 4 to10), comprehensive urban and rural health centers (CURHCs) and health houses were selected. A portion of the sample was selected from each of the selected centers based on the population they covered. Then, trained interviewers visited the selected centers on random days of the week to interview women and men aged over 60 years. After explaining the objectives and content of the study to the participants and obtaining their informed consent, they were asked to complete the questionnaire. Only the elderly who had medical records at the CURHCs and had no history of incurable diseases and cognitive disorders were eligible for inclusion in the study. The exclusion criteria were irregular visits to the center for receiving services, the participants' first visit to the center and unwillingness to be interviewed.

Data collection was conducted in two months (January to March 2020) applying the standard SERVQUAL questionnaire. We used the latest edition of the translated, standardized instrument with 28 items. The questionnaire consists of two sections, a demographic section (including gender, marital status, education level and other personal variables) and a section on the dimensions of service quality, including tangibility (five items), reliability (five items), responsiveness (five items), assurance (five items), access (four items) and empathy (four items). The reliability and validity of the questionnaire have been approved in several conducted studies (11,12). The participants responded to the 28-item questionnaire twice; once they stated their perceptions of the services delivered and once they expressed their expectations of the services required to be delivered. A five-point Likert scale was used to record responses to the questions with a score from 1 to 5. To obtain the total score for each service quality dimension, we added the scores and divided them by the number of questions. Thus, the perception, expectation, and dimension scores ranged from 1 to 5. The difference between services delivered for all the dimensions was calculated by subtracting the expectation score from the perception score.

Data analysis
Descriptive (i.e., mean, standard deviation, percent and frequency) and analytical, statistical tests (i.e., paired t test, ANOVA, Pearson's correlation and multiple linear regression) were conducted employing STATA 13. In our study, P values below 0.05 were considered as statistically significant.

Results
This research examined urban and rural elderly individuals' perspectives on the quality of services provided by the integrated care program for the elderly in CURHCs. The study population consisted of 701 elderly individuals aged between 60-90 years with a mean age of 68.38 ± 6.90 years. Most of the participants were within the age range of 60-75 years (84.02%) and most of the women were housewives (59.63%). Moreover, 57.62% of the participants were rural residents, 71.47% were married, 55.78% were illiterate and only 2% had academic degrees. The majority (63.62%) of the respondents reported their socioeconomic status (SES) to be in the middle range (Table 1).

Expectations were higher among women than men (4.13 versus 4.12); however, the difference was not statistically significant ($P = 0.390$). An increase in age was associated with a decline in the expected and perceived service quality scores. This declining trend was only statistically significant for the mean of perceived service quality score ($P = 0.007$; Table 1).

The highest means of expected and perceived service quality scores were reported for single elderly individuals

Table 1. Demographic characteristics of participants

Variables	Category	Percent	Expected ServQual	P value	Perceived ServQual	P value
Gender	Female	67.90	4.13±0.02	0.392	3.89±0.02	0.597
	Male	32.10	4.12±0.02		3.90±0.03	
Age group	60-75 year	84.02	4.13±0.45		3.88±0.45	
	76-90 year	15.69	4.11±0.47	0.884	3.97±0.50	0.177
	>90 year	0.29	4.00±0.94		4.06±0.84	
Residence	Rural	57.63	4.15±0.02	0.138	3.96±0.02	0.007
	Urban	42.37	4.11±0.02		3.84±0.02	
Marital status	Single	0.57	4.19±0.30		4.06±0.31	
	Married	71.47	3.89±0.49	0.453	4.14±0.47	0.757
	Divorced	0.86	3.87±0.31		3.74±0.41	
	Widow	27.10	4.10±0.42		3.90±0.46	
Living Arrangement	With partner & children	70.19	4.14±0.46		3.89±0.48	
	Just children	19.26	4.04±0.46	0.204	3.93±0.45	0.731
	Alone	10.56	4.10±0.43		3.88±0.48	
Job	Employed	11.70	4.17±0.43		3.91±0.48	
	Unemployed	13.55	4.11±0.49	0.741	3.9±0.50	0.689
	Retired	15.12	4.10±0.49		3.91±0.48	
	Housewife	59.63	4.13±0.45		3.87±0.47	
Ethnicity	Fars	32.95	4.11±0.44		3.86±0.46	
	Turk	41.37	4.12±0.47	0.578	3.90±0.48	0.539
	Lor	22.25	4.16±0.47		3.93±0.49	
	Kurd	3.42	4.06±0.37		3.83±0.50	
Education	Illiterate	55.78	4.11±0.47		3.88±0.48	
	Primary	31.81	4.10±0.46		3.92±0.50	
	Middle School	6.13	4.21±0.42	0.858	3.96±0.43	0.757
	High School	4.28	4.21±0.42		3.96±0.43	
	Higher Education	2	4.18±0.51		4.00±0.52	
Socio economic status	Very Good	2.85	4.23±0.39		3.96±0.53	
	Good	16.83	4.15±0.50		3.90±0.50	
	Moderate	63.62	4.11±0.46	0.657	3.88±0.49	0.942
	Bad	14.69	4.14±0.42		3.91±0.38	
	Very Bad	2	4.12±0.02		4.12±0.02	
Number of children	0	0.43	4.02±0.41		3.70±0.63	
	1-3	17.55	4.10±0.46	0.577	3.87±048	0.423
	4-6	57.63	4.15±0.45		3.88±0.48	
	>6	24.39	4.10±0.47		3.94±0.47	

compared to married ones concerning marital status. However, the differences were not statistically significant (*P*=0.453 and *P*=0.757, respectively). Moreover, concerning education level, the highest expected and perceived service quality scores were observed in older adults with primary and secondary school education, respectively, but the differences were not statistically significant (*P*=0.757 and *P*=0.858, respectively). The highest expected service quality score was observed in those with very good SES, whereas the highest perceived service quality score was observed in those with very bad SES (Table 1).

The mean of expected quality was higher than the mean of perceived quality in all the dimensions and this negative gap was meaningfully significant in all dimensions (*P*<0.001). The highest means of expected and perceived scores were observed in the dimensions of assurance (4.50 versus 4.33), responsiveness (4.46 versus 4.31), and reliability (4.42 versus 4.19). Using a paired *t* test, the dimensions, as mentioned earlier' expected means were starkly and statistically different from the corresponding perceived means (*P*<0.001). Moreover, the lowest means of the expected and perceived scores were observed in the 'access' dimension (Table 2).

The highest correlation (0.82) was found between the

Table 2. The mean of expected and perceived ServQual domains

Variable	Expected Mean ±SD	Perceived Mean ±SD	P value[a]
Tangibility	4.35±0.57	3.88±0.68	<0.001
Reliability	4.42±0.59	4.19±0.63	<0.001
Responsiveness	4.46±0.57	4.31±0.61	<0.001
Assurance	4.50±0.55	4.33±0.55	<0.001
Empathy	3.52±0.48	3.37±0.52	<0.001
Access	3.51±0.50	3.28±0.55	<0.001
Total	4.12±0.01	3.89±0.01	<0.001

Paired *t* test.

responsiveness and reliability dimensions of the expected means. In contrast, the lowest correlation (0.41) was observed between the sympathy and physical dimensions of the perceived means (Table 3).

Linear regression evaluated the association between various demographic factors and the mean total score of expected and perceived service qualities. Results showed that living in villages ($P = 0.217$), a higher education level ($P = 0.436$), living with relatives ($P = 0.818$) and poor socioeconomic status ($P = 0.734$) was directly associated with an increase in the mean total score of expected quality. Furthermore, male gender ($P = 0.183$), single ($P = 0.289$) and unemployed ($P = 0.322$) were inversely associated with an increase in the mean total score of expected quality (Table 4).

Compared to the urban elderly, the rural elderly had a higher mean (0.12) of perceived service quality score, which was statistically significant ($P = 0.003$; linear regression model). Moreover, for every unit increase in education level, 0.05 was added to the mean perceived service quality score, which was also statistically significant ($P = 0.015$; Table 5).

Discussion

Quality is critical in service delivery to achieve customer satisfaction. The current study examined the elderly satisfaction with the quality of services provided by an integrated care program. Based on our results, the elderly perceptions of the delivered services were significantly lower than their expectations regarding quality dimensions.

Previous studies were focusing this gap in all or some of the dimensions of SERVQUAL in health services (13-16).

Quality in health services includes qualities of technical (quality of outcome) and task (quality and method of service delivery). Technical quality in health services refers to the correctness of diagnosis, the effectiveness of treatment and their accordance with professional standards, which health service experts evaluate. On the other hand, task quality is related to the method of delivering health services. Due to customers' lack of knowledge on the technical dimension, task quality is a significant determinant of quality perception in the eyes of service recipients (17). It can be said that the quality of service depends on customer preferences; therefore, the service recipients' interpretation of the quality is more

Table 3. Correlation of ServQual domains

Domains	Level	Tangibility		Reliability		Responsiveness		Assurance		Empathy		Access	
		E	P	E	P	E	P	E	P	E	P	E	P
Tangibility	E	E	P										
	P	1	1										
Reliability	E	0.63		1									
	P		0.52		1								
Responsiveness	E	0.57		0.82		1							
	P		0.44		0.75		1						
Assurance	E	0.57		0.71		0.73		1					
	P		0.43		0.65		0.77		1				
Empathy	E	0.56		0.65		0.67		0.77		1			
	P		0.41		0.59		0.67		0.75		1		
Access	E	0.55		0.65		0.64		0.69		0.75		1	
	P		0.48		0.58		0.58		0.61		0.68		1

* All correlation was statistically significant ($P<0.001$), E: Expected, P: Perceived.
Pearson correlation test was used.

Table 4. The role of some factors on the Total expected ServQual scores using multiple linear regression

Variables	Coefficient	95% CI	*P* value
Residence (rural vs. urban)	0.05	[-0.03, 0.12]	0.217
Gender (male vs. female)	-0.06	[-0.15, 0.3]	0.183
Age group			
75-90 vs. 60-75 years	0.00	[-0.10, 0.10]	0.938
>90 vs. 60-75 years	-0.11	[-0.76, 0.54]	0.737
Marriage status (single vs. married)	-0.06	[-0.19, 0.06]	0.289
Number of children (per one)	0.00	[-0.02, 0.02]	0.898
Living arrangement (with parents vs. alone)	0.02	[-0.12, 0.15]	0.818
Job (unemployed vs. employed)	-0.06	[-0.18, 0.06]	0.322
Education (per one level)	0.02	[-0.03, 0.06]	0.436
Socio-economic status			
Moderate vs. good	-0.04	[-0.13, 0.05]	0.378
Weak vs. good	0.02	[-0.10, 0.14]	0.734
Constant	4.32	[3.95, 4.70]	<0.001

Table 5. The role of some factors on the total perceived ServQual scores using multiple linear regression

Variables	Coefficient	95% CI	P value
Residence (rural vs. urban)	0.12	[0.04, 0.20]	0.003
Gender (male vs. female)	-0.05	[0.14, 0.05]	0.334
Age group			
75-90 vs. 60-75 years	0.07	[-0.03, 0.18]	0.167
>90 vs. 60-75 years	0.14	[-0.53, 0.81]	0.681
Marriage status (single vs. married)	0.03	[-0.09, 0.16]	0.587
Number of children (per one)	0.01	[0.001, 0.03]	0.140
Living condition (with parents vs. alone)	-0.06	[-0.19, 0.08]	0.419
Job (unemployed vs. employed)	-0.01	[-0.14., 0.11]	0.868
Education (per one level)	0.05	[0.01, 0.10]	0.015
Socio-economic status			
Moderate vs. good	-0.02	[-0.11, 0.08]	0.734
Weak vs. good	0.03	[-0.10, 0.15]	0.683
Constant	3.66	[3.27, 4.05]	<0.001

critical than managers' interpretation.

Moreover, quality is achieved when the customers' expectations are appropriately fulfilled. The gap observed in this study was smaller than that observed in other similar studies. Since the elderly are among the vulnerable groups, promoting the quality of services and gaining their satisfaction is necessary to remain in line with preventive and medical recommendations.

In the current study, the minor gaps were associated with the dimensions of assurance, responsiveness, and reliability. On the other hand, the elderly reported access and empathy as the most undesirable dimensions. These findings are different from those of Lim et al (18).

The assurance dimension describes healthcare providers' ability to pass on a sense of trust to recipients of services. The responsiveness dimension covers willingness to cooperate and deliver services. The reliability dimension describes the correct and committed delivery of services to recipients (19). Quality promotion programs should prioritize these dimensions and attempt to further their recipients' perceptions of their expectations. Empathy, in this regard, means paying particular attention to each customer and their feelings and convincing them that the organization understands them. Thus, paying attention to the significance of adequately treating the elderly and understanding their different needs can help gain their satisfaction and reduce the service quality gap considerably.

Another finding of the current study was the greater satisfaction of the rural elderly concerning service delivery. It may be due to the lower burden of care in rural areas than in cities, which spares care providers to allocate more time to patient care and tailor it to individual patients' needs.

Conclusion

A gap between expectations and perceptions may be due to various issues such as shortage of resources, weak management, inattention to people's demands, authorities' unawareness of people's demands and people's high expectations. The gap observed in different quality dimensions in this study can help detect existing weaknesses and eventually, plan and allocate resources to address them optimally. In the service sector, the most significant organizational category that can affect service quality and client satisfaction is low hierarchy levels in any organization. In the eyes of clients, the service quality concept is mainly embedded in assessing the behavior and activities of workers in this category. Workers may dissatisfy clients if they lack the necessary skills to fulfill their tasks and if they do not behave appropriately with clients. In this regard, we recommend paying particular attention to frontline workers in direct contact with the elderly and including customer service education in their training programs. Furthermore, we recommend providing health centers with efficient equipment to meet clients' needs and advise workers to treat clients with humility.

Limitations of the study

One of the significant limitations of our study was the condition posed by the COVID-19 pandemic quarantine that had particularly affected the elderly as a vulnerable group. Another limitation could be the lack of mastery of the Persian language by the elderly of different ethnicities in the province, which was removed by employing local colleagues during the interviews.

Authors' contribution

AD, NZ and AK-Sh conceptualized, planned, and supervised the study. Zach interpreted the data. PCh drafted the manuscript, administrated all the questionnaires, and carried out the database management. Zach carried out the statistical analyses. All authors read and approved the manuscript.

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