
PUBLIC HEALTH RESEARCH

Knowledge, Attitudes, and Practices of Students towards Total Quality Management in Education at High Institute of Health Sciences in Sana'a, Yemen

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ABSTRACT

Received	05 August 2017
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Introduction	The quality of education is one of the controversial topics and vital issues that requires more emphases from researchers due to the current challenges in education at the university level. Involvement and participation from the studentis essential to implement quality assurance and to reach for academic accreditation. The aim of this study is to assess knowledge, attitudes, and practices (KAP) of students towards TQM in education and its influencing factorsatHigh Institute of Health Sciences (HIHS) in Sana'a, Yemen.
Methods	A cross-sectional study using a self-administered questionnaire was conducted in 2016. A total of 208 students from second and third study levels in HIHS had participated from 268 students were observed (study population). Descriptive statistics, chi-square, and one-way ANOVA were used to determine the association between students' KAP towards TQM in education with its influencing factors.
Results	Mean age of the students were 22.44(SD±2.027) year old. Majority of HIHS students were male 135 (64.9%) and 108 (51.9%) were from the third studying level. The highest students' KAP scores were 53.4%, 65.4%, and 41.3% for good knowledge, good attitudes, and moderate practices respectively. Education Department was found to be significantly associated with students' knowledge and practices with $p<0.05$. In addition, the means of knowledge, attitudes, and practices were higher among pharmacy, radiology, and physiotherapy students respectively than laboratory students. Students' practices were found to be significantly associated with management, academic, and material factors with $p<0.001$.
Conclusions	HIHS students were observed to have good knowledge, good attitudes, and moderate practices towards TQM.
Keywords	KAP - TQM - students - influencing factors -Yemen.

INTRODUCTION

Quality can be described as standards degree of excellence. High-quality teaching/instruction can be regarded as the goodness or effectiveness in teaching institution, which can result in student learning and satisfaction.¹ According to Sawhel (2012) in his report on global competitiveness, most Arab states performed poorly with regard to the quality of their education systems.² Hence, the quality of education is one of the controversial topics and vital issues that warrant more emphases from researchers due to the current challenges in education at the university level.³

In the education domain, some factors such as the budget reduction, the low level of the graduates' knowledge and skills, have led to the need for people and governments to embark on extensive reconstruction or improvement of the educational systems.⁴ Furthermore, faculties should call their customers i.e. students to discuss further among both parties' need and contributing factors towards quality improvement.⁵ One distinctive aspect of services is consumers as part of the production and delivery processes.⁶

Quality Management is one of the indicators used in improving the quality of goods and services production in order to satisfy customers' demands.⁷ TQM principles could be applied in education both administrative and academic side and improving students/academic and non-academic morale, increasing productivity, and delivering higher quality services to customers/students.^{1, 9} TQM in higher education has a huge effect mainly on students. They will become more healthy, willing to collaborate, and support of their society.¹⁰ The implementation of TQM focused on four dimensions believed to be supporting successful TQM in the educational field: students, faculty, employees, and community. Agarwal et al. (2011) pointed that implementation of TQM leads to increasing teaching efficiency, reducing education costs, and strengthening the bond between institutions and their students. Furthermore, the researchers explored the use of TQM principles in schools in Yemen, (Al-Qashairi, 2007), in UAE (Madbouli, 2001), and in India (Agarwal et al., 2011).⁸

In fact, many organizations accept TQM as a management paradigm in order to cope with the changing expectations of the organization. TQM has its own origins established primarily in the industrial sector then spreads later to profit and non-profit organizations including public organizations (such as health and education institutions).¹¹ In addition, TQM has been used successfully in a variety of organizations such as healthcare organizations, government agencies, educational institutes, banks, library, and transportation facility act.^{13, 4}

Teachers and schools are the suppliers of effective learning tools, environment, and systems to students who are the schools' primary customers. The school is responsible for providing long-term educational welfare for students by teaching them how to learn and communicate in effective ways, how to assess the quality in their own work and how to invest in their lifelong and life-wide learning processes by maximizing opportunities for growth in every aspect of daily life.¹²

There are numerous problems in the educational system in Yemen according to both the latest report of The World Bank about the higher education status in the Republic of Yemen, and the report of the United Nations Development Programme (UNDP) - Regional Bureau for Arab States (RBAS) on Quality Assessment of Education Programmes in Arab countries.¹⁴

According to Mosalam (2010), educational process and improvement are low in High Institute of Health Sciences (HIHS) from the teaching staff point of view. This study is important and it will be the first study in TQM among students in HIHS. HIHS is the superior institution among ten institutes in different cities in Yemen. On that ground, it is important to support the application of quality to encourage the leaders of the institute to amplify this experience into all branches of the institute.¹⁵ Moreover, to reach for educational quality and academic accreditation, HIHS has adopted quality assurance practices through implementation of quality rings in different departments. It is hope that the findings of this study can be applied to help the Quality Assurance Unit in the institute to implement a correct strategy and operational plan to enhance quality culture among its students. Furthermore, the application of educational quality will lead to professional graduates in health sciences. The aim of this study is to assess students' knowledge, attitudes, and practices towards TQM in education and its influencing factors.

METHODOLOGY

Study design and sampling

The study was conducted using a cross-sectional study design. A validated self-administered questionnaire with five Likert's scale closed-ended questions was used as a survey instrument. A total of 268 questionnaires were distributed to second and third levels of students in High Institute of Health Sciences (HIHS) in Sana'a city, Yemen. Laboratory, pharmacy, radiology, physiotherapy, and public health departments were involved. The sample size was determined by surveying 268 students as the total number of study population.

Data Collection

The data collection was conducted in July, 2016. The questionnaire consists of five parts. The first

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part comprised socio-demographic data including study level, educational department, age, and gender. The second part is about students' knowledge towards TQM. The third part is about students' attitudes and the fourth part is about students' practices towards TQM. The fifth part is about influencing factors of TQM such as management factors, academic factors, and material factors. The five-point Likert's scales, with response categories ranking from absolute agree to absolute disagree for all parts of questionnaire except in the fourth part categories ranking from always to never were used. From all 268 students to whom the questionnaire forms were distributed, 208 questionnaire forms were completely filled in, with a response rate of 77.6%.

Reliability of instrument

From a pilot study done, Cronbach alpha coefficient value was (0.805) for 61 items. In addition, the questionnaire was validated through revisions and reviews by the experts who added in or omitted out necessary and unnecessary items. Ethical approval was obtained from the University of Science and Technology medical ethical committee with approval number (2016/19).

Statistical analysis

The data were analyzed using Statistical Package for Social Sciences (SPSS) version (20.0). Both descriptive analysis and inferential statistics were used to present the study results. ANOVA, Chi-square, and Pearson Correlation tests were used to test the associations among different variables. There were seven analyzed variables. Dependent variables include knowledge, attitudes, and practices of students towards TQM. Independent variables include socio-demographic factors (age, gender, and study level/year of studying, management factors (educational department and quality assurance unit activities), academic factors (academic support and lecturers), and material factors (educational tools and attractiveness of study place). The total scores of knowledge, attitudes, and practices were divided into < 50% as poor, 50-75% as moderate, and > 75% as good. *P*-value of less than 0.05 was used as statistically significant consideration.

RESULTS

Sociodemographic Characteristics

Table 1 Sociodemographic Characteristics of respondents (n=208)

Sociodemographic Characteristics	No.	%
Study Level		
Second	100	48.1
Third	108	51.9
Educational department		
Public health	17	8.2
Pharmacy	46	22.1
Laboratory	62	29.8
Radiology	43	20.7
Physiotherapy	40	19.2
Gender (M/F)		
Male	135	64.9
Female	73	35.1
Age group (years)		
<22 years	61	29.3
≥22 years	147	70.7

Table 1 reveals that the majority of students were from laboratory, pharmacy, and radiology department, which comprised 29.8%, 22.1%, and 20.7% respectively. The majority of students were male, with a mean age of (22.44±2.027) of participated students and almost equally from third and second studying levels.

As can be seen from Figure 1, most of the participants were in a good level of knowledge and attitudes towards TQM (53.4%, 65.4%) respectively. Meanwhile, practices level was distributed nearly evenly between good and moderate (38%, and 41.3%) respectively.

Figure 1 Level of overall Students' knowledge, attitudes, and practices towards TQM

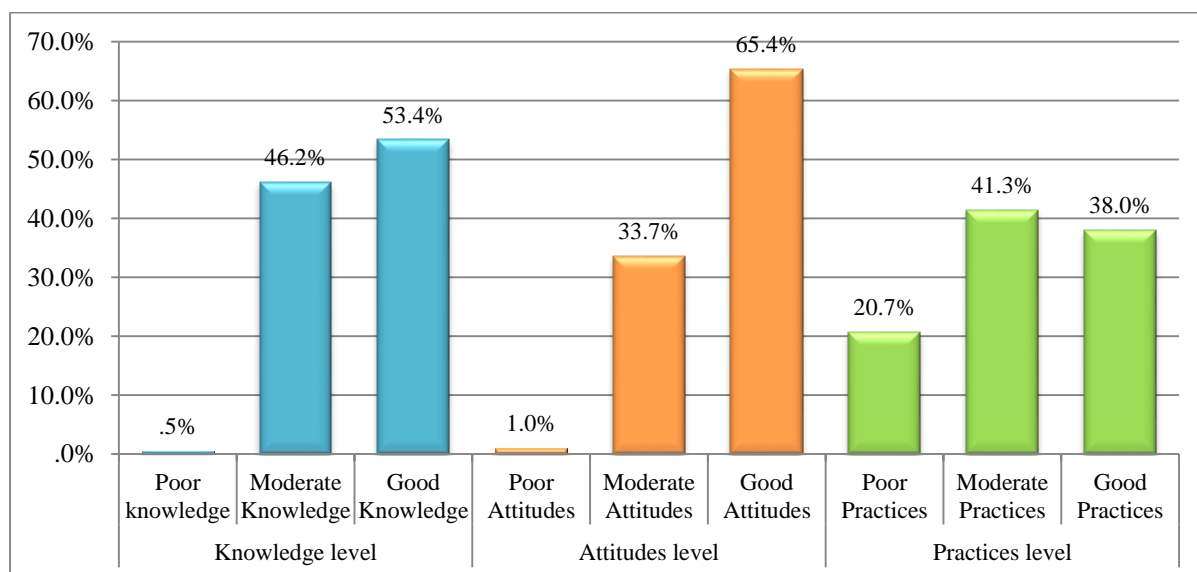


Table 2: The association of knowledge and attitudes levels with sociodemographic characteristics

Sociodemographic characteristics	Knowledge Level				Total		Chi-square	P.value
	Good knowledge		Moderate knowledge		N	%		
	N	%	N	%				
Gender								
Male	69	51.1	66	48.9	135	100	0.785	0.375
Female	42	57.5	31	42.5	73	100		
Age groups (years)							2.874	0.09
<22 years	27	44.3	34	55.7	61	100		
≥22 years	84	57.1	63	42.9	147	100		
Study level							20.726	0.001*
Second	37	37.0	63	63.0	100	100		
Third	74	68.5	34	31.5	108	100		

Sociodemographic characteristics	Attitudes level				Total		Chi-square	P.value
	Good knowledge		Moderate knowledge		N	%		
	N	%	N	%				
Gender							2.0887	0.149
Male	93	68.9	42	31.1	135	100		
Female	43	58.9	30	41.1	73	100		
Age groups (years)							0.459	0.498
<22 years	42	68.9	19	31.1	61	100		
≥22 years	94	63.9	53	36.1	147	100		
Study level							3.469	0.06
Second	59	59.0	41	41.0	100	100		
Third	77	71.3	31	28.7	108	100		

*The association is significant at <0.001 level.

Table 2 shows that there was no statistical difference of knowledge level between students' gender, and age. On the other hand, the chi-square was significantly different $p < 0.001$ between mean

scores of knowledge associated with studying level. The percentage of good knowledge was higher among higher studying level.

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Table 3 The association of practices level with sociodemographic characteristics

Sociodemographic characteristics	Practices Level						Total		Chi-square	P.value
	Good practices		Moderate practices		Poor practices		N	%		
	N	%	N	%	N	%				
Gender										
Male	59	43.7	54	40.0	22	16.3	135	100	7.05	0.029*
Female	20	27.4	32	43.8	21	28.8	73	100		
Age group (years)									1.52	0.468
<22 years	27	44.3	22	36.1	12	19.7	61	100		
≥22 years	52	35.4	64	43.5	31	21.1	147	100		
Study level									0.473	0.79
Second	40	40.0	39	39.0	21	21.0	100	100		
Third	39	36.1	47	43.5	22	20.4	108	100		

*The association is significant at < 0.05 level.

Table 3 shows that there was a statistical difference of practices between students' gender. The mean of practices level was higher among males than females.

Table 4 The association of KAP levels with Educational Departments

KAP	ANOVA(educational departments)				
	Sum of Squares	df	Mean Square	F	Sig.
Mean knowledge					
Between Groups	1.920	4	0.480	3.031	0.019*
Within Groups	32.152	203	0.158		
Total	34.072	207			
Mean attitudes					
Between Groups	2.547	4	0.637	1.989	0.097
Within Groups	64.990	203	0.320		
Total	67.538	207			
Mean practices					
Between Groups	11.249	4	2.812	3.559	0.008*
Within Groups	160.406	203	0.790		
Total	171.656	207			

*The association is significant at <0.05 level.

Table 4 reveals that the mean of knowledge and practices was statistically significant among Educational Departments.

Table 5 The mean of KAP levels among departments (HOC test*)

Departments	N	Mean Knowledge	Mean Attitudes	Mean Practices
		Subset for alpha = 0.05		
Laboratory	62	44.1613	3.8266	3.0233
Public Health	17	45.3529	4.0074	3.0719
Physiotherapy	40	46.25	4.0719	3.5806
Radiology	43	46.6977	4.0901	3.5375
Pharmacy	46	46.9783	4.0543	3.3382
Sig. level		0.203	.445	.153

*Scheffe test

Table 5 shows that the means of knowledge, attitudes, and practices were

higher among pharmacy, radiology, and physiotherapy students respectively than

laboratory students.

Table 6 The association among students' KAP towards TQM with management, academic, and material factors (n=208)

Influencing factors	KAP of students	Mean knowledge		Mean attitudes		Mean practices	
		r	P.value	r	P.value	r	P.value
Mean management factors		0.071	0.310	0.075	0.283	0.341	0.001*
Mean academic factors		-0.089	0.202	-0.002	0.974	0.274	0.001*
Mean material factors		0.049	0.482	-0.065	0.353	0.207	0.003*

*The association is significant at <0.001 level, r= Pearson correlation

Table 6 illustrates that the management, academic, and material factors were significantly associated with practices of students towards TQM. It also illustrates that the management, academic, and material factors were not significantly associated with knowledge and attitudes of students towards TQM.

DISCUSSION

The present study was conducted in High Institute of Health Sciences in Sana'a city to find out the knowledge, attitudes, and practices of students towards total quality management (TQM). In this study, most of the students were from the age group of ≥22 years. The majority of students have good knowledge, good attitudes, and moderate practices towards TQM.

The institute has a clear vision towards quality assurance implementation through different efforts which have been made to spread quality culture. These results agree with the institute plan since 2006 to 2010 to achieve the quality assurance and accreditation. In addition, the improvement in the level of overall students' knowledge, attitudes, and practices towards TQM among students in the institute may be due to the activities implemented in different departments such as quality rings.¹⁵ In contrast, Blasiak R, et al. (2014) study, conducted at the University of North Carolina (UNC) School of Medicine reported that medical students' knowledge of patient safety and quality improvement is low.¹⁶ A similar study was done by Na'eem (2002) in Saudi Universities which shows that "students' attitudes supported the application of the concept of Total Quality Management".³ Also, Al-Tarawneh and Mubaslat's (2011) study, which was about the implementation of Total Quality Management on the Higher Education Sector in Jordan, reported that the attitudes of the respondents regarding the

principles of the TQM were within a high mean.¹⁷

This study found that the association of socio-demographic factors with TQM, such as age and gender, shows no significant relationship with knowledge and attitudes of students regarding TQM. Similar to Na'eem's (2002) study, it is revealed that there was no significant relationship between socio-demography and the students' attitudes towards the application of total quality management.³ This may be due to the fact that the quality programs do not focus on the contrast between gender and age of students.

Furthermore, the researcher found that there is a significant relationship between knowledge and attitudes of students regarding TQM with studying level. Na'eem's (2002) study also shows that there is a statistically significant correlation between the concept of quality management and the variables of years of study³. In addition, third-level students have more scores in knowledge and attitudes towards TQM than the second-level students. This result may be due to different studying periods (years) and the number of different activities regarding the quality they received.

Moreover, the researcher found that there is no significant relationship between age, studying level, and practice of TQM. However, there is a significant relationship between the gender and practice of TQM. The majority of male students possess good practices than female students. Na'eem's (2002) study in Saudi Arabia similarly shows "low female faculty members' practice of teaching sciences skills in the light of the comprehensive quality standards from the students' perspective".³ These results may be partly due to the fact that the number of male students outweighs the number female students. Male students have also more participation in quality than female students due to gender and social limitations.

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Moreover, this study highlights the significant relationship between Educational Department and KAP of TQM. This fact may be attributed to the different efforts which have been made by Educational Department Management and teaching staff to improve quality culture among students. Also, these results may be due to the fact that some departments had financial support from some international organizations to enhance their programs according to quality standards rather than other departments. This means that Educational Department has a strong effect on KAP of students.

The present study shows that there is no significant correlation between management, academic, and material influencing factors of TQM and knowledge and attitudes of students. On the other hand, the study also shows that there is a significant correlation between management, academic, and material influencing factors of TQM and practices of students. This study has several possible limitations which could be due to the political and financial affairs in the country bearing a negative effect on Quality Assurance Unit activities among students in HIHS. Hence, the association between influencing factors of TQM with knowledge and attitudes of students may be influenced by these political and financial affairs through receiving few activities related to influencing factors. These results may indicate the concern of institute management by operational requirements of quality than theoretical requirements as well which may lead to improvements in students' practices. In contrast, Kimani S et al. (2011) study, which offered the business students' perceptions of service quality among Kenyan Universities, showed that "the important factors which determine service quality are administrative and academic quality factors".¹⁸ Similar to Nawelwa J, et al. (2015) study, titled an analysis of Total Quality Management (TQM) Practices in Zambian Secondary Schools showed that "to a large extent all the identified TQM principles are being practiced in Lusaka district".¹⁹

CONCLUSION

In conclusion, this study found that the students have good knowledge, good attitude, and moderate practices towards total quality management (TQM). In addition, there is a significant relationship between Educational Department, knowledge, and practices of students towards TQM. Moreover, the means of knowledge, attitudes, and practices were higher among pharmacy, radiology, and

physiotherapy students respectively than laboratory students. In addition, studying level is significant and related to knowledge, attitudes, and practices of students towards TQM.

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