

# Students' Perspective And Experience Of The Skills Course And Learning Management System In A Reformed System-Based Curriculum

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## Research Article

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# Abstract

**Background:** The reformation of medical education system and getting up-to-date with novel technologies to understand the learning concepts is a biggest challenge.

**Objectives:** The aim of this study was to explore the Saudi students' perspective and experience of learning skills (LS) course and learning management system included in their medical curriculum.

**Materials and methods:** Courses can be improved significantly if students provide meaningful feedback. The course evaluation survey is the most widespread indirect method of assessing courses. Imam Mohammad Ibn Saud Islamic University (IMSIU) introduced dynamic Blackboard (Bb) in LS course nearly 7-8 years in the first semester of the first year medical curriculum. The College of Medicine, IMSIU, Riyadh, Saudi Arabia. A total of 306 students who had successfully completed their preparatory year from the academic year 2019-2020 were enrolled.

**Results:** Out of 306 participants, 241 (53.9% males and 46% females) responded and agreed that the LS course has improved their learning process. The LS course has enhanced students' overall communication (65.6% males and 66.9% females) and time management (75.4% males and 64.9% females) skills. The LS course helped in students' understanding of problem and team-based learning methods (72.3% males and 61.3% females), and also assisted in learning of other learning techniques (67.7% males and 64.9 females). Likewise, ~72.2% students agreed that the LS course aided in managing of psychological conditions of stress and anxiety. Most of the students (78.5% males and 74.8% females) revealed that the training of the LS course has tremendously improved their knowledge ( $p=0.04$ ).

**Conclusions:** The majority the students were convinced about the utility of the LS course. The present study warrants the practice of Bb as a new educational instructional learning technique. This is the very first report exploring the Saudi students' experience and opinion about the effects of the LS course and learning management system on their academic achievements, coping techniques and career advancements since its implementation in IMSIU's medical curriculum.

## Introduction

Learning skills are critical determinants of success in a learner-centered model in all the education specialties including medical science education. It is important for medical students to develop sound learning habits due to technicality of the stream and importance of the knowledge required to practice it for a successful career in medical sciences. Medical students display wide spectrum in terms of knowledge accumulation, culture, knowledge quality, age, level of preparedness, as well as learning preferences and styles [1, 2] It is surprising for the students that a particular course of action intended to achieve learning itself must be learned properly. However, after around 10-12 years of formal schooling, a large number of students enter in the higher education by enrolling into graduate programs without having prior knowledge of any fundamental learning skills. When these students start the subject of

medical education then they motivated to become a more active learner, and understanding of fundamentals of learning skills and its management is absolutely necessary [3, 4]. A majority of the students realize that they need to assimilate a significant amount of novel information during their learning process, and this type of diverse thinking process is generally welcomed by the tutors [5]. However, this process of learning skills of the students also poses a challenge for the tutors to encounter the educational needs of the students. Also, those students who fail to recognize the importance of learning skills, they usually face various problems and difficulties in coping with the requirements of the subject and face huge academic pressure that ultimately leads to poor academic performance [6]. The value of learning skills has long been a source of exchange of views and ideas among teachers at all the levels of educational development [7]. Although, various researches are under progress to endorse the inclusion of learning skills such as time management, stress management, learning theories, and other skills to progress in the academic success [8]. A study showed that the medical students who did not undergo specific training with learning and communication skills, declined in their interviewing performance during their clinical years [9].

The learning skills course leaves an indelible mark of positive impression on the mood and motivation of the entire medical education process. Lately, in the year 2014, a local study reported that 71.9% students supported the complementarity of the learning skills exercises with the course, and according to them those were very useful in the academic success [5]. Earlier reports published from different regions of the world demonstrated a high prevalence of psychological morbidity, like, anxiety, stress, and depression, among the undergraduate medical students [10, 11]. A local study published in the year 2011, reported a high prevalence of stress among female (75.5%) and male (57%) medical students [12]. Whatever is the background, like lack of proper stress management or dearth of time management; it is obvious that the transformation from high school to medical college is not an easy journey, which frequently ensues in frustration and poor academic performance in their medical education process. Generally, this happens not because they lack the ability to grasp or the awareness about subject knowledge, but they failed to understand the learning style or sometimes they do not have effective learning skills and coping strategies. Likewise, another study revealed that good and positive time management approach improves students' GPA score, whereas poor and negative time management approach declines the academic performance [13, 14, 15]. Although, some medical colleges have a system of student guidance and other endorsing programs, but still there is a paucity of well-structured courses on students' learning skills [16].

The reform of medical education system is a biggest challenge in all the medical colleges as getting up-to-date with novel technologies to understand the learning concept is not easy. The college of medicine, Imam Mohammad Ibn Saud Islamic University (IMSIU), Riyadh, Saudi Arabia has started using dynamic Blackboard (Bb) from last 7-8 years to improve the learning skills of the undergraduate students. In order to track the effectiveness of these newly introduced learning skills to the medical students' of IMSIU for their understanding of medical education, this study was aimed to evaluate the IMSIU's college of medicine's activities of running a learning skills course for the first year medical students describing the characterized process, instructional strategy and assessment of the course. Also, this study evaluates the

utilization of Bb for the first year medical students in their learning process and skills development. The overall objective of this students' feedback survey based study was to assess the utility of the learning skills for the medical students, as with the help of these learning skills that they can successfully overcome the challenges occur during their medical education process and can lead to improvement in the current learning process ensuing into learner oriented changes in the teaching policy.

**Context:** The 'learning skills' (LS) course was introduced initially in the newly reformed medical curriculum of IMSIU during the academic year 2008 - 2009. This course was introduced in undergraduate medical curriculum to develop sound learning habits such as problem based, community oriented, and outcome based learning among the medical students. These learning habits include the identification of medical students' learning needs, selection of what to learn, and successful reflection of their learning experience in their academic performance. The LS course was introduced with the intention to achieve some competencies listed in the Saudi medical professionals' framework, such as inter-professional collaboration, clinical reasoning-&-decision making, communication skills, professionalism, knowledge of information gathering tools, and associated research tasks. This LS course comprises 20 interactive sessions (each session 1 hour), such as communication skills, problem based learning (PBL), time management, stress management etc.; out of 20 sessions, 4 sessions are allocated for Blackboard (Bb) training and Bb learning management (version 9.2 service pack 10) program that works on Windows operating and Java (1.6) based hosting system. Bb provides various interactive tools for the students like announcement, calendar, informing the learner about the subject, grades etc. In IMSIU's college of medicine, the LS course is made available in the first semester of the first year medical program. The total number of the students (both males and females) enrolled in the course were 312 in the academic year 2019-2020. The LS course was open for enrollment to the students who had successfully completed their preparatory year. The student's course guide was sent to the registered students, faculty members, and other educators or trainers involved in the course in electronic or hard-copy format. The student's course guide contained all the necessary information including the course title, course code, credit hours, course duration, name and contact information of the course committee members, aim(s), general and specific objective(s) of the course, title of the sessions with instructional methods, schedule, suggested references, etc. The overall objective of the LS course is to facilitate the transition process of the medical students into academic teaching and learning culture by employing specific learning skills and generating self-motivation in order to excel in their academic performance or to get success in their future studies. This is the very first report from Saudi Arabia on students' perspective about the impacts of the LS course and learning management system on their academic performance in a reformed-system based curriculum.

## Methods

This feedback survey based study was carried out at the College of Medicine, Imam Mohammad Ibn Saud Islamic University (IMSIU), Riyadh, Saudi Arabia, using a self-administered questionnaire about their experience and opinion of the LS course. The survey questionnaire was distributed to all the participating first year medical students (both male and female) of the academic year 2019-2020. The participation of

the medical students was completely voluntary. During the study, anonymity of the participants and their responses were kept confidential.

**Data collection tools:** The survey questionnaire was developed after extensive literature review, and it was also based upon the opinions of other faculty members about the learning skill course. The survey questionnaire was divided into two parts, the first part consisted of seven items that assessed the students' perception towards the current learning skill course, such as enhanced communication skills, time management, problem/ team -based learning (PBL/TBL), learning multiple methods, stress and anxiety handling, professionalism and medical ethics, and internet search for apt references. Second part contained five items about utilization of Bb, such as training of Bb to obtain course description, utilization of Bb to get lecture materials of the course, and utility of Bb for the submission of homework and assignments. The responses of all these items were recorded on a 5-point Likert scale as, strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1).

**Data analysis:** The collected data were coded and entered into the Microsoft Excel program and analyzed using SPSS version 21.0 statistical software program. During the analysis, the mean scores of male and female students were included for various comparisons. Statistically significant differences were determined using Student's t-test. The associations between the different categorical variables were measured by Chi-square test. One-way analysis of variance (ANOVA) was used to compare the mean values across the categorical variables. Statistical significant levels were maintained as  $p$ -value  $<0.05$ . The Cronbach's alpha was used for the reliability of a test.

## Results

### *Participants' information*

A total of 306 questionnaires were distributed to the students, and out of them, 241 were answered with the response rate of 78.7%. Out of 241 responding participants, 53.9% were males and 46% were females. The internal consistency of the instrument was measured using Cronbach's alpha reliability and showed 0.87 for all the 13 questions. For each question, the corrected item-total correlation of the 13 item scale ranged between 0.49 to 0.61. This caused the correlation indexes remain very good; the internal consistency of the items is given in **Figure 1**.

### **Post-course (learning skill) survey**

**Table 1. Items that measured the student's perception towards the current LS block.**

Questions	Mean±SD	Categoriest	Participants n (%)	Male n (%)	Female n (%)	p-value*
The LS course enhanced my communication skills.	3.59±1.16	Agree	158(65.6)	87(66.9)	71(64)	0.03
		Neutral	29(12.0)	19(14.9)	10(9)	
		Disagree	54(22.4)	24(18.5)	30(27)	
The LS course helped me to improve my time management (to set priorities).	3.78±1.13	Agree	170(70.5)	98(75.4)	72(64.9)	0.32
		Neutral	26(10.8)	12(9.2)	14(12.6)	
		Disagree	45(18.7)	20(15.4)	25(22.5)	
The LS course helped me to understand PBL and TBL.	3.64±1.13	Agree	162(67.2)	94(72.3)	68(61.3)	0.04
		Neutral	30(12.4)	13(10)	17(15.3)	
		Disagree	49(20.3)	23(17.7)	26(23.4)	
During the course, I was able to learn through multiple methods (self-learning-peer assisted learning and tutor assisted learning).	3.73±0.93	Agree	160(66.4)	88(67.7)	72(64.9)	0.8
		Neutral	54(22.4)	29(22.3)	25(22.5)	
		Disagree	27(11.2)	13(10)	14(12.6)	
The LS course helped me to recognize and handle the symptom of stress and anxiety appropriately.	3.90±1.11	Agree	174(72.2)	87(66.9)	87(78.4)	<0.0001
		Neutral	32(13.3)	24(18.5)	8(7.2)	
		Disagree	35(14.5)	19(14.6)	16(14.4)	
The LS course helped me to know and act along the guideline of professionalism and medical ethics.	3.76±1.12	Agree	164(68.0)	95(73.1)	69(62.2)	0.24
		Neutral	36(14.9)	18(13.8)	18(16.2)	
		Disagree	41(17.0)	17(13.1)	24(21.6)	
The LS course Improved my skills like information gathering, searching internet for medical references.	3.93±1.07	Agree	185(76.8)	102(78.5)	83(74.8)	0.54
		Neutral	22(9.1)	10(7.7)	12(10.8)	
		Disagree	34(14.1)	18(13.8)	16(14.4)	

Overall mean score- 3.79±0.10. \* Chi-square test, † the 5 point Likert scale responses were combined into 3 different categorical variables; agree (strong agree plus agree), neutral, disagree (strongly disagree plus disagree).

**Table 1.** Summarizes the students' perception about the benefits of the LS course that included seven items. The student's overall responses demonstrated that he/she agreed that the LS course enhanced his/her learning process in a system-based curriculum (mean  $3.79 \pm 0.10$ ). Most of the students (65.6% males and 66.9% females) responded that the LS course has enhanced their overall communication skills. Furthermore, most of the students (75.4% males and 64.9% females) reported that LS course helped in the improvement of their time management skills to set the work priorities. However, no statistically significant correlation was observed between the male and female students ( $p=0.32$ ). Also, the students (72.3% males and 61.3% females) responded that the LS course helped in understanding the PBL and Team methods, and significant difference was found between the male and female students ( $p=0.04$ ). Similarly, most of the students (67.7% males and 64.9 females) were in agreement that the LS course assisted in learning of multiple methods including self-learning-peer assisted learning and tutor assisted learning. Regarding the management of stress and anxiety occurred during the students' transition process, ~72.2% students approved that the LS course aided in recognizing and handling these psychological conditions. The participating medical students also responded that the LS course helped in facilitating the actions according to the guidance of medical professionalism and ethics.

**Table 2:** Items regarding the information obtained from the undergraduate medical students about the utilization of Blackboard (Bb)

Questions	Mean±SD	Categoriest	Participants n (%)	Male n(%)	Female n(%)	P-value*
Training during the LS course helped me to improve my knowledge.	3.75±1.03	Agree	174(72.2)	102(78.5)	83(74.8)	0.04
		Neutral	26(10.8)	10(7.7)	12(10.8)	
		Disagree	41(17)	18(13.8)	16(14.4)	
Training during the LS course facilitated my independent learning and group learning skills.	3.62±1.06	Agree	148(61.4)	81(62.3)	67(60.4)	0.28
		Neutral	52(21.6)	29(22.3)	23(20.7)	
		Disagree	41(17)	20(15.4)	21(18.9)	
Blackboard training was useful in obtaining course description.	3.57±1.21	Agree	147(61)	81(62.3)	67(60.4)	0.01
		Neutral	40(16.6)	29(22.3)	23(20.7)	
		Disagree	54(22.4)	20(15.4)	21(18.9)	
Blackboard training was useful to get the lectures material of the course.	3.54±1.78	Agree	137(56.8)	69(52.6)	68(61.8)	0.16
		Neutral	45(18.7)	30(22.9)	15(13.6)	
		Disagree	58(24.1)	31(23.6)	27(24.5)	
Blackboard training was useful in submitting homework and assignments.	3.25±1.29	Agree	109(45.2)	62(47.7)	47(42.3)	0.13
		Neutral	62(25.7)	32(24.6)	30(27)	
		Disagree	70(29)	36(27.7)	34(30.4)	
Blackboard was useful in contacting to the faculty through E-mailing.	3.25±1.22	Agree	101(41.9)	63(48.5)	38(34.2)	0.05
		Neutral	76(31.5)	32(24.6)	44(39.6)	
		Disagree	64(26.6)	35(26.9)	29(26.1)	

Overall mean score- 3.49±0.20. \* Chi-square test, † the 5 point Likert scale responses were combined into 3 different categorical variables; agree (strong agree plus agree), neutral, disagree (strongly disagree plus disagree).

**Table 2.** Abridges the perception of students regarding the Bb training sessions, which included a total of five items. The students' response revealed that they were satisfied with the Bb training, the overall mean of all the item was 3.49±0.20. Most of the students accepted (78.5% males and 74.8% females) that during the LS course training their knowledge has been improved tremendously; and the results were statistically significant ( $p=0.04$ ). Likewise, a good number of the students (62.3% males and 60.4% females) reported that Bb is useful in obtaining course description, and the difference between the male and female students was statistically significant ( $p=0.01$ ) (Table 3). Also, the comparative analysis elucidated that only 47.7% males and 42.3% females accepted the utility of Bb in the submission of homework and assignments ( $p=0.13$ ) (Table 3). Moreover, 41.9% students reported that Bb is useful for

contacting the faculty members via their e-mails. Additionally, the results also revealed that 56.8% students reported that Bb is useful in getting the lecture materials of the course. ANOVA between male and female participating students against each question has been given in **Table 3**.

**Table 3:** Analysis of variance between male and female students against each question.

Subjects	Factors	F	ANOVA (p)
Course questions	The LS course enhanced my communication skills.	1.76	0.18
	The LS course helped me to improve my time management (to set priorities).	4.3	0.03
	The LS course helped me to understand PBL and TBL	2.7	0.1
	During the course, I was able to learn through multiple methods (self learning-peer assisted learning and tutor assisted learning).	0.94	0.33
	The LS course helped me to recognize and handle the symptom of stress and anxiety appropriately.	0.08	0.77
	The LS course helped me to know and act along the guideline of professionalism and medical ethics.	4.44	0.03
	The LS course Improved my skills like information gathering, searching internet for medical references.	0.18	0.67
Training questions	Training during the LS course helped me to improve my knowledge.	1.66	0.19
	Training during the LS course facilitated my independent learning and group learning skills.	1.49	0.22
	Bb training was useful in obtaining course description.	2.98	0.08
	Bb training was useful to get the lectures material of the course.	0.82	0.36
	Bb training was useful in submitting homework and assignments.	1.22	0.27
	Bb was useful in contacting the faculty via e-mail.	1.27	0.26

## Discussion

It has been very well-established that education requires a variety of instruction methods that will enhance the learning process. By using various learning methods, we may enable and encourage for self-directed learning. The courses in the learning skills may offer the potential of providing novel ways/strategies to develop critical thinking and communication skills. Various university level curricula of the world have incorporated critical thinking and communication skills in their learning skills course. College level entrance examinations in some countries have adopted the use of predominantly open-ended questions to measure the students' sophisticated thinking and communication skills [17,

18]. Earlier, it has been also reported that teachers alert their students using a different style of learning; a learning that is more investigative, participatory, and personal, can improve students' approach towards learning process regardless of their conceptions of learning [19].

In this study, nearly two third (65.6%) of the students agreed that LS course enhanced their communication skills. In fact, such learning skills are considered to be one of the most important skills for the medical students to prepare them for their career advancement and future practice. Previous studies have also reported that physicians' communication skills lead to greater therapy adherence [20], and overall satisfaction with care [21]. Nevertheless, prescription to teach such skills in LS course by placing in the first year medical degree course might promote students' learning especially in the student-centered programs.

Earlier study reported that the time management process requires self-credit of the individual first, personal knowledge with his/her own personal traits guiding analysis on the time-use problem and gathering applicable data, estimate alternative solutions, and selection and implementation of above mentioned alternatives [22]. In this study, 70.5% of the medical students agreed that time management is of a great significance and the LS course assisted in setting their time priorities. Our findings were in contrast with previously published study, which concluded that 88.09% of the participating students possessed a time management score at the moderate level [23].

During pursuance of medical education many factors that causes stress and anxiety occur especially in case of the availability of the option of more study pressure. One of the previously published results showed that medical students develop depression and stress after beginning their medical education [24, 25]. Interestingly, others have found that female students perhaps are more likely to experience stress and depression [26, 27] and female physicians tend to have higher suicidal rate than their male counterparts [28]. It was soothing that we found 78.4% female medical students answered positively and accepted that LS course helped them to handle the stress and anxiety. Our results were matching with the previously published findings of local study, where students gave high rating to stress management session in the LS course [5].

Generally, the education process needs a variety of instructional methods that may enable and motivate for self-directed learning. Presently, educational institutions all over the world started using e-learning tools such as Bb as a part of their instructional setting [29]. Previous studies reported that Bb is useful in obtaining course materials [30]. Likewise, another study also reported that ~89% of the students accepted the utility of Bb in obtaining the course description and grades [31]. On the similar lines, the results of our study demonstrated that 61% students approved the utility of Bb in obtaining the course description ( $p=0.01$ ). Also, one of the earlier studies reported that ~52.8% students agreed about the usefulness of Bb in assignment(s) submission [32]. According to the data available, ~95% students detected some technical problems during the submission of assignments [31]. However, the present study showed that ~45.2% of students acknowledged the usefulness of Bb in submitting the homework and assignments.

Overall the findings of this study are very encouraging and promising, and in long run this will pave the way for implementing such type of LS courses and management systems in order to enhance students' learning process during their academic and educational transition stage. To the best of our information, this is the very first report from Middle-east countries, and especially from Saudi Arabia that examines the impacts of LS course and learning management system in a reformed system based curriculum from students' point of view in terms of their academic achievements, coping techniques and career advancements. The present study is very important because a plethora of reports on successful implementation of LS course and learning management system are available from western or developed countries, and only scanty reports pertinent to medical students' learning skills are available from Middle east countries, unfortunately none of them address the students' view-point and experience about such learning skills. While, this article critically reviews the feedback of the IMSIU's medical students' experience and perspective of LS course in the form of a systematic follow-up study after 7-8 years of its implementation in a system based reformed medical curriculum. Also, the results of current study revealed that the LS course is equally effective among Saudi students and endorsed the efficiency of the LS course irrespective of geographical, psychological and other societal barriers.

## Conclusion

Going through the experience of the way of administering this LS course and the in-depth analysis of the medical student's feedback, we concluded that the overall students had a convincing reaction for the LS course. In general, various factors affect the students' academic achievements; and our current findings demonstrate that time management, stress and anxiety management, dealing with PBL of the first year medical students have a notable effect on their academic performance and the most significant factor, i.e., feedback and suggestions from the students, played an important role in improving the students' learning skills inventories. The response against the utilization of the Bb learning management system warranted the need of systematic training program(s) for the students before starting the assessment and homework announcement. Also, Bb must be included as a new educational instructional method in the presently used learning techniques. This is very first time we are reporting the Saudi students' perspective and experience about the effects of the LS course and learning management system affecting their academic achievements, coping techniques and career advancements included in IMSIU's system based medical curriculum.

## Declaration

### **a. Ethics approval and consent to participate:**

The study was not required ethical approval according to the guidelines of Research Ethics Committee, Imam Mohammad Ibn Saud Islamic University (IMSIU). All methods were carried out in accordance with relevant guidelines and regulations. The objective and the aim of the research was explained to the study subjects on the information sheet of the questionnaire, verbal and written informed consent was obtained from each study subject after explanation of the purpose of the study and involvement (to be a

participant) was after their complete consent. The study participants who did not want to take part were not forced to take part, and there was no personal identification on the data sheet, and all data taken from the participants was kept strictly confidential.

**b. Consent for publication:** Not Applicable

**c. Availability of data and materials:**

All data generated or analysed during this study are included in this published article

**d. Competing interests**

The authors declare that they have no competing interests.

**e. Authors' contributions**

SK and MAA were involved in study design, implementation across sites, qualitative and quantitative analysis of data, manuscript preparation. SK and MAA are responsible for overall content as guarantor. Both authors read and approved the final manuscript.

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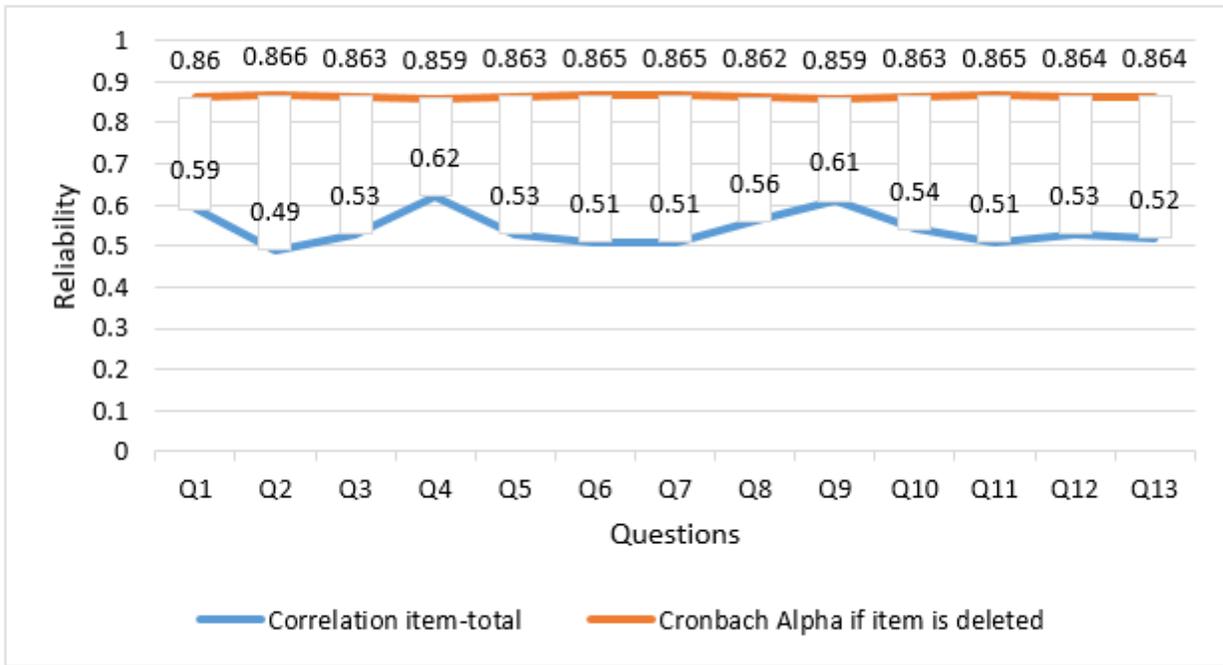
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## Figures



**Figure 1**

Internal consistency corrected item-total correlation, and questionnaire Cronbach Alpha IF each item is deleted and for the questionnaire as a whole (n=241).