ORIGINAL ARTICLE

Knowledge and attitude toward radiological contrast material among patients attending secondary healthcare hospitals Jazan, KSA, 2019

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ABSTRACT

Background: Radiological contrast materials (RCMs) are safe and widely used but adverse events may occur, which may be mild or life threatening and lead to death. The present study aimed to assess the knowledge and attitude levels toward RCMs among patients in Jazan city, Saudi Arabia.

Methodology: This cross-sectional study recruited 414 patients, who visited the Radiology Department at general hospitals of the Ministry of Health, in Jazan during October to December 2018 and underwent a radiological diagnostic workup. The study was conducted via a self-administered questionnaire.

Results: A total of 414 participants were included in the study. The male to female ratio was 1:1. Almost half of the participants were employed and one-third were unemployed. Half of the participants expressed their poor knowledge about radiological contrast material and two-thirds of the patients had a neutral attitude toward radiological contrast material. However, there were statistical significances between occupation and educational level, and with knowledge and attitude level.

Conclusion: These findings highlight a need for programs that would aim to increase the level of awareness about the importance of radiological contrast material and related indications and contraindications.

Keywords: Radiological contrast materials, consent form, knowledge, attitude.

Introduction

Radiological contrast materials (RCMs), also called contrast agents or radiological contrast media (RCM), are used to improve pictures of the inside of the body produced by X-rays, computed tomography, magnetic resonance imaging, and ultrasound [1]. Every radiologist is familiar with contrast agents, and with the increasing number of patients receiving these medications [2].

Ideally, RCMs should achieve very high concentrations in the tissues without producing any adverse effects. Unfortunately, this has not been possible so far and all RCMs have adverse effects [3]. The adverse effect of using these materials can range from transient minor reactions, such as nausea, vomiting, mild urticaria, mild pallor, and pain in injected extremity, to life-threatening severe reactions, such as pulmonary edema, cardiac arrhythmia, cardiac arrest, circulatory collapse, and unconsciousness.

Delay or late adverse reactions include skin reactions as maculopapular rash, erythema, urticaria, and angioedema [4]. However, in the last decades, procedures employing RCM have rapidly increased. Significant improvements in the composition of RCM during the past few decades have made them safer and better tolerated.

Although RCMs are safe and widely used, adverse events that can be classified as general and organ-specific might

occur and questions remain about their use, safety, and interactions [2]. However, the reported rates of severe reactions to RCM are quite low; however, they can quickly become life-threatening and lead to death [5].

In the last decade, procedures employing RCM have rapidly increased. Significant improvements in the composition of RCM during the past few decades have made them safer and better tolerated.

The patient's general medical condition, their knowledge, and attitude toward these materials should be taken into consideration. An informed medical consent is essential to the physician's ability to diagnose and treat patients, as well as the patient's right to accept or reject clinical evaluation, treatment, or both [6]. Awareness of different risk factors and screening for their presence before the use of contrast agents allows early detection of possible adverse reactions and their prompt treatment [3].

With regard to the level of education, although the illiteracy rate is decreasing among some communities, many patients still do not have enough knowledge regarding the use of RCMs, and this would affect their decision to accept or reject the process. The present study aimed to highlight the need for health education programs that would focus on the importance of RCMs, as methods used to diagnose different diseases after medical assessment to rule out any contraindicated disease or medicine. The objective of this study was to assess the knowledge and attitude levels toward radiological contrast material among patients attending general hospitals of the Ministry of Health, in Jazan.

Subjects and Methods

This cross-sectional study was conducted in a secondary healthcare hospital in the Jazan region, one of 13 administrative regions in Saudi Arabia. The study recruited patients who visited the Radiology Department at general hospitals of the Ministry of Health in Jazan during October to December 2018, and those who underwent a radiological diagnostic workup. The selected 414 patients via convenient sampling for this research were filtered by applying inclusion and exclusion criteria. Patients older than 15 years of age, who had contrast radiological imaging that were requested by the physician, were included in the study. Patients who were less than 15 years of age were excluded. This study was conducted through a questionnaire, which was revised by an expert panel of consultants of internal medicine, family medicine, and radiology with qualified staff in health quality, health informatics, and health administration to ensure face and content validity. It was translated into Arabic language and tested for reliability by measuring its internal consistency. Cronbach's alpha coefficient was 0.7, indicating good reliability.

The questionnaire of this study consisted of sections; the first section included socio-demographic questions (age, gender, occupation, and education level); the second section included 19 main items (eight items were

closed-end questions for knowledge assessment and 11 items were evaluated on a modified 3-point Likert-type scale (agree, neutral, and disagree). For knowledge assessment, 1 point for the correct answer and 0 points for the wrong answer was given; then, the summation of points was established for each participant with the following considerations: 0-3 = poor knowledge, 4-5 = fair knowledge, and 6-8 = good knowledge. For attitude assessment, 11 questions were assessed on a 3-point modified Likert-type scale: 3 points for positive attitude, 2 points for neutral attitude, and 1 point for negative attitude. Then, the summation of the points for each participant with the following considerations was carried out: 11-19 = negative attitude, 20-26 = neutral attitude, and 27-33 = positive attitude.

For data entry and statistical analysis, Statistical Package for the Social Sciences 20.0 statistical software package was used. Quality control was carried out at the stages of coding and data entry. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations, medians, and interquartile range for quantitative variables. Chi-squared test was used to record the statistical significance between participants' answers and their demographic characteristics.

Results

According to the study design, 414 participants were included in the study. The male to female ratio was 1:1. Almost half of the participants were employed and one-third of participants were unemployed (Table 1).

With regard to the knowledge level and attitude level toward radiological contrast material (RCM), Figure 1

Table 1. General characteristics of the participants (n = 414).

Demographic characteristics	Frequency (*n*)	Percent (%)
Age (years)		
16-30	64	21.5
31-45	144	48.5
46 +	58	19.5
Gender		
Male	197	66
Female	101	34
Occupation		
Student	7	2
Employee	93	31.50
Unemployed	75	25
Educational level		
Intermediate	73	24.50
University education and higher	74	24.80

shows that 50% expressed their poor knowledge about radiological contrast material.

There was no statistical significance (*p*-value < 0.05) between the age of the patients and their gender and with their level of knowledge, as shown in Table 2. However, unemployed showed poor attitude toward radiological contrast material with statistical significance (*p*-value < 0.05). Among the education level, patients with university education and higher, had good knowledge toward radiological contrast material with statistical significance (*p*-value < 0.05).

There was a positive attitude between patients' age and gender toward radiological contrast material but there was no statistical significance (Table 3). Patients showed positive attitudes when they were students, had a job, or had a high level of education.
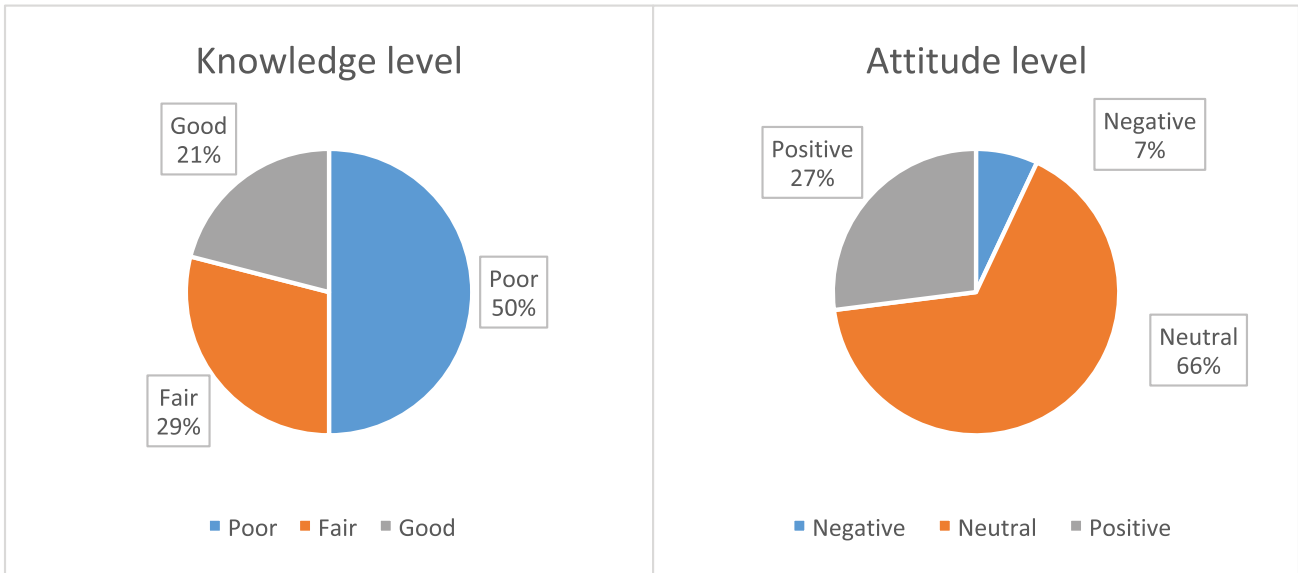

Figure 1. *Percentage of patients between knowledge level and attitude level (n = 414).*

Table 2. Relationship between physicians' satisfaction with the needs of family medicine practice and their general characteristics (n = 414).

	Knowledge level			
	Poor (%)	Fair (%)	Good (%)	*p*-value
Age (years)				
16-30	52.4	19.37	18.25	
31-45	46.4	24.1	29.5	0.103
46 +	48	36	16	
Gender				
Male	50.7	29.8	19.5	0.723
Female	49.7	27.6	22.6	
Occupation				
Student	41.2	29.6	29.1	
Employee	56.6	26.5	16.8	0.002[a]
Unemployed	58.9	29.5	11.6	
Educational level				
Intermediate	64.1	25.9	10	0.001[a]
University education and higher	36.1	31.7	32.2	

[a]Statistically significant at *p* < 0.05.

Table 3. Relationship between physicians' satisfaction with the effective communication of family medicine practice and their general characteristics (n = 414).

	Attitude level			
	Negative (%)	Neutral (%)	Positive (%)	*p*-value
Age (years)				
16-30	8.7	65.9	25.4	
31-45	2.7	67.9	29.5	0.316
46 +	8	64	28	
Gender				
Male	7.4	67	25.6	0.812
Female	6.5	65.3	28.1	
Occupation				
Student	5.3	57.1	37.6	
Employee	8.8	72.6	18.6	0.001*
Unemployed	8	75	17	
Educational level				
Intermediate	8.6	76.6	14.8	0.001*
University education and higher	5.4	55.6	39	

Discussion

RCMs enhance the quality of images, revolutionizing the radiologist's ability to differentiate soft tissue densities [3]. Overall, the findings of this study suggested poor knowledge about radiological contrast material and two-thirds of the patients had a neutral attitude toward radiological contrast material. The present results were in line with one study [7] that showed about 70% of patients were not aware about the risk of using RCMs. Among patients with asthma or kidney disease, more than half of them did not know that RCM may cause death in rare cases.

The study results revealed that there was no statistical significance between age of the patients and their gender and with their levels of knowledge and attitude, but patients with university education had the highest percentage of good knowledge as compared to others, although this percentage was still lower than the percentage of poor knowledge of same group. Neptune et al. [8] found similar a result in their study.

On the other hand, 66.2% of the patients had a neutral attitude, while a higher percentage for positive attitude was among university-educated patients and employed patients (39% and 37.6%) respectively. This might be attributed to the ability of educated patients to understand the information from the healthcare providers saves time as in a previous study that was carried out to assess health provider's practices and attitudes toward informal discussion with their patients about the benefits and risks of medical imaging procedures [9].

This study has some limitations; it was a cross-sectional design; according to the literature review, a pre- and post-evaluation study design would be of better value. The time for this study was very limited and the study sample was 414, and for this reason, the authors excluded the illiterates, as they required formal interviews (which would take a longer time).

Conclusion

The patients had a poor level of knowledge and most of them had an in-between (neutral) attitude. There was a significant association between occupation and level of education with knowledge level and attitude. These findings highlight a need for programs that aim to increase the level of awareness about importance of radiological contrast material and related indications and contraindications.

List of Abbreviations
RCM   Radiological contrast material

Conflict of interest
The authors declare that there is no conflict of interest regarding the publication of this article.

Consent to participate
Informed consent was signed by all the participants.

Ethical approval
Ethical approval was obtained from the Scientific Committee of Jazan Hospital IRB department, letter no: NO.1810, dated: 19 April 2018.

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