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A cross sectional study on assessing the knowledge, attitude and perception towards allergic reactions of paracetamol in Malaysia

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Abstract: Recent years, the prevalence of paracetamol allergy becomes great concerns. However, data on knowledge, attitude and perception towards allergic reactions of paracetamol are lacking. This study aimed to investigate knowledge, attitude, and perception towards allergic reactions of paracetamol (KAP-ARP). A cross-sectional survey was conducted using a validated self-administered questionnaire around Pasar Siti Khadijah, Kelantan from February 2016 to January 2017 among the general population. A total of 177 respondents participated in this study. The mean percentage scores for knowledge, attitude and perception towards allergic reactions of paracetamol were 31.7% (SD 23.6), 53.1% (SD 19.2) and 53.3% (SD 23.9), respectively. This study revealed that respondents demonstrated a poor level of knowledge, a fair level of attitude and negative perception towards allergic reactions of paracetamol. These results may lay a basis for conducting a study of knowledge, attitude and perception towards allergic reactions among general population in other different setting or around Malaysia.

Keywords: Knowledge, attitude, perception, allergic reaction, paracetamol.

INTRODUCTION

Paracetamol is considered to be a well-established and widely used drug as a leading non-prescription antipyretic analgesic. In addition, it is also considered as one of the most frequently used drugs in intentional overdoses. Thus, it is essential to detect and prevent adverse drug reactions (ADRs), mainly because these are an important cause of morbidity and mortality. The pharmacovigilance does this after a drug is marketed. However, adverse drug reactions are significantly underreported worldwide.

There were few numbers of evidence from studies conducted across the world links that paracetamol showed very serious side effects. In Malaysia, the Adverse Drug Reactions ADR report 2014 stated that paracetamol is one of the top analgesics as suspected drugs with 213 reports that cause the adverse effect like urticarial, itching as well as rash maculo-papular. A review of this matter has been made by the National Pharmaceutical Regulatory Agency (NPRA), Ministry of Health Malaysia regarding the risk of a drug safety communication issued by the US FDA (National Pharmaceutical Control Bureau, 2015). There were 107 reports of serious skin reaction has been discovered on a review done by US FDA. It mostly involves single active ingredient paracetamol product.

Three reported cases comprising positive rechallenge where patients developed relapse of serious skin reactions after consuming paracetamol over again (National Pharmaceutical Control Bureau, 2015).

NPRA had received 1018 ADR reports related to paracetamol with 1972 adverse events from the year 2000 to February 2015 (National Pharmaceutical Control Bureau, 2015). 78 percent of total 790 reports involved showed at least one skin reaction pruritus, rash, urticaria, and angioedema. Serious skin reactions involve 18 reports on Stevens-Johnson syndrome (SJS), 5 on erythema multiforme, 4 on toxic epidermal necrolysis (TEN), 2 on SJS-TEN overlap and one acute generalised exanthematous pustulosis (AGEP). Despite the prevalence of paracetamol allergy in Malaysia becomes great concerns in recent years, knowledge, attitude, and perception towards allergic reactions of paracetamol (KAP-ARP) among general population is still unknown. This study assessed the three quotients - knowledge (K), attitude (A), and perceptions (P) among the general population which could serve as baseline data for future studies for other states in Malaysia.

MATERIALS AND METHODS

Study design and population

A cross-sectional survey using a validated questionnaire was carried out from February 2016 until January 2017 among the general population in Kota Bharu, Kelantan. The questionnaires were distributed to public around Pasar Siti Khadijah which is located in the middle of Kota Bharu town.

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Participants were eligible to be included if they: 1) ages more than 18 years old, 2) well understand English language and 3) recognize and have used paracetamol even once. Those who did not meet any of those criteria were excluded from the study.

Each participant was informed about the nature and purpose of the study and the usage of data and was asked if they would participate. If the participant agreed, written informed consent was obtained. A minimum number of participants required for this study were 175. An extra 10% is added in order to account for non-response (Rodrigues *et al.*, 2015). The participants were selected using convenient sampling method.

Ethical approval

The study was approved by the Cyberjaya University of Medical Sciences (CUCMS) Research Ethics Review Committee (CRERC) (Reference number: CUCMS/CRERC/ER/020).

English-version questionnaire on the knowledge, attitude, and perception towards allergic reactions of paracetamol (KAP-ARP)

KAP-ARP is a validated questionnaire which is useful for measuring knowledge, attitude, and perception towards allergic reactions of paracetamol. The KAP-ARP contains 29 items consisted of 13 Knowledge, 8 Attitude and 8 Perception items. The KAP-ARP questionnaire is reliable based on its internal consistency reliability (Knowledge: α =0.78; Attitude: α=0.63; Perception: α=0.70). Detail information of the questionnaire is available upon request.

STATISTICAL ANALYSIS

The one-way analysis of variance (ANOVA) or independent t-test was used to compare percentage scores of each domain with various demographic factors. A correlation between different domains of questionnaire was also assessed using Pearson's correlation test. Statistical analysis was done using SPSS/Win software (Version 21, SPSS, Inc., Chicago, IL, USA). The limit of significance was set at 0.05.

RESULTS

Demographic characteristics

Demographic characteristics of the respondents of the questionnaires are shown in table 1. A total of 200 questionnaires were filled by the public around Pasar Siti Khadijah which is located in the middle of Kota Bharu town during the study period. However, 177 (useable rate of 88.5%) of the questionnaires were found complete, and the rest, therefore, were excluded from the analysis.

More than half of the respondents were adults aged 18 years old to 35 years old (n=131, 74.0%). Majority of the respondents were female (n=121, 68.4%) and Malay (n= 167, 94.4%). Besides, most of the respondents were from pre-university/Diploma qualification (n=72, 40.7%). More than half of the respondents were employed (n = 96, 54.2%).

Knowledge, attitude, and perception towards allergic reactions of paracetamol (KAP-ARP)

The mean percentage score for knowledge towards allergic reactions of paracetamol was 31.7% (SD 23.6). We considered a score of 80-100% 'Good Knowledge'; a score of 50-79% 'Satisfactory Knowledge' and < 50% 'Poor Knowledge'. The mean percentage score indicated that the respondents showed poor knowledge on paracetamol allergic reaction (John, 2011). The mean percentage score for attitude towards allergic reaction of paracetamol was 53.1% (SD 19.2). A score of ≥ 70% was considered 'Good Attitude', a score of 51-69% a 'Fair Attitude', and a score of ≤ 50% a 'Poor Attitude'. The stated mean percentage score showed fair attitude towards allergic reaction of paracetamol (Khan *et al.*, 2014). The mean percentage score for perception towards allergic reactions of paracetamol was 53.3% (SD 23.9). A score of ≥ 60% was considered 'Positive Perception' while a score of < 60% was considered 'Negative Perception'. The mean percentage score indicated that the respondents had negative perception towards allergic reaction of paracetamol (Coban and Yurdagul, 2014). Details of descriptive analysis of KAP-ARP are available upon request.

Comparison of mean percentage scores of knowledge, attitude, and perception towards allergic reactions of paracetamol (KAP-ARP) with respect to demographic factors

There were no significant differences of mean percentage scores of knowledge, attitude, and perception towards allergic reactions of paracetamol with respect to demographic factors except for the mean percentage scores of attitude between races (table 1).

Correlation between knowledge, attitude and perception towards allergic reaction of paracetamol (KAP-ARP)

There were significant correlations between all domains of the questionnaire. Knowledge, attitude and perception towards allergic reaction of paracetamol were positively correlated with each other (Pearson's $r > 0.350$) (table 2). Strength of correlation between 0.3 to 0.7 is a moderate correlation (Malhotra *et al.*, 2013). Thus, this study showed moderate correlations between the knowledge, attitude and perception factors towards allergic reactions of paracetamol among general population.

DISCUSSION

Using previously validated questionnaire, we assessed knowledge, attitude, and perception towards allergic reactions of paracetamol (KAP-ARP) among general

Table 1: Mean percentage scores of knowledge, attitude and perception towards allergic reactions of paracetamol (KAP-ARP) with respect to demographics (n = 177)

Variable	Knowledge		Attitude		Perception	
	Mean (SD)	*p* value	Mean (SD)	*p* value	Mean (SD)	*p* value
Gender*						
Female (n = 121)	31.32 (23.20)	0.759	52.56 (18.17)	0.553	53.19 (23.68)	0.934
Male (n = 56)	32.50 (24.66)		54.41 (21.44)		53.51 (24.69)	
Age (year)**						
< 25 (n = 75)	28.53 (20.97)	0.485	53.54 (18.49)	0.851	53.29 (22.38)	0.625
26 – 35 (n = 56)	32.32 (26.08)		51.51 (17.99)		52.49 (24.64)	
36 – 45 (n = 24)	34.17 (20.20)		54.69 (21.77)		50.74 (24.38)	
46 – 55 (n = 17)	37.06 (30.37)		52.39 (21.95)		54.83 (28.76)	
> 56 (n = 5)	42.00 (22.80)		60.63 (26.57)		69.29 (22.10)	
Race**						
Malay (n = 167)	31.80 (23.73)	0.956	53.44 (18.64)	0.040	53.31 (24.08)	0.978
Chinese (n = 7)	30.00 (25.82)		50.89 (23.64)		54.08 (26.84)	
Indian (n = 2)	25.00 (21.21)		<1		53.57 (10.10)	
Others (n = 1)	40.00 (<1)		<1		42.86 (<1)	
Highest academic qualification**						
High school (n = 45)	35.33 (21.28	0.360	58.13 (16.73)	0.373	57.70 (25.81)	0.069
Pre-University/ Diploma (n = 72)	31.81 (25.25)		51.52 (18.48)		51.29 (21.97)	
Bachelor's degree (n = 54)	30.37 (23.55)		50.98 (21.71)		54.23 (23.63)	
Maters/ PhD (n = 2)	20.00 (28.28)		56.25 (8.84)		60.71 (40.41)	
Others (n = 4)	12.50 (9.57)		53.91 (24.79)		23.21 (19.01)	
Employment status**						
Student (n = 53)	27.74 (3.02)	0.233	52.24 (16.89)	0.564	50.74 (22.93)	0.809
Employed (n = 96)	34.79 (24.49)		53.29 (20.79)		54.72 (24.37)	
Unemployed (n = 19)	31.05 (26.22)		57.73 (16.18)		52.63 (25.69)	
Others (n = 9)	23.33 (12.25)		47.22 (21.39)		54.37 (24.01)	

SD, standard deviation; *Data were analysed using independent t-test; **Data were analysed using one-way analysis of variance (ANOVA)

population in Kota Bharu, Kelantan which could serve as baseline data for future studies for other state in Malaysia. This study was the first to investigate knowledge, attitude, and perception towards allergic reactions of paracetamol among general population.

In this study, respondents had poor knowledge, fair attitude and negative perception towards allergic reactions of paracetamol. It is noteworthy to mention that this study highlighted the significant association between knowledge and attitude, knowledge and perception as well as attitude and perception towards allergic reactions of paracetamol. This study showed moderate correlation between the knowledge, attitude and perception factors towards allergic reactions of paracetamol among general population. These moderate correlations might be due to poor level of knowledge, fair level of attitude and negative perception towards allergic reactions of paracetamol.

To the best of our knowledge, no other study on knowledge, attitude, and perception towards allergic reactions of paracetamol is available for comparison. Previous study assessed knowledge towards side effects of oral NSAIDs and the results showed that respondents had generally good knowledge (Grimmer *et al.*, 2002). As detailed by Hughes *et al.* (2002), in their report stated that only 16% of small sample of the general public in UK could name at least one side effect of their over-the-counter (OTC) medicines. It is important to educate the general population regarding allergic reactions of paracetamol.

General population is denotes to approximately all or representative sample of entirely individuals living in a given area where the data collection was conducted (Johnston, 2000). The distribution of gender was not equal in number in this study. Latest estimation statistics of population distribution in Kelantan by Department of Statistics Malaysia (2010) showed that female outnumbered male. Most of the respondents in this study were Malays. Only 5.7% was non-Malay which includes Chinese, Indian and others. There was only one respondent who is a Khadazan was classified under others group. However, she lives and works in Kelantan. According to Department of Statistics Malaysia (2010), Malays was the predominant race group in Peninsular Malaysia with 63.1% out of overall Malaysian citizens. Chinese is a minority group community in Kelantan (Meng, 2011). For the highest academic qualification backgrounds, majority of the respondents were pre-university or diploma holders (40.7%), followed by

Table 2: Correlation between knowledge, attitude and perception towards allergic reaction of paracetamol

Variable	Knowledge	Attitude	Perception
Knowledge	1	-	-
Attitude	0.385[a,b]	1	-
Perception	0.350[a,b]	0.550[a,b]	1

[a]Pearson's correlation; [b]$p<0.05$ shows statistical significance

bachelor's degree holders (30.5%) and high school leavers (25.4%). In Malaysia, receiving primary and lower secondary levels are most common. Nevertheless, not all students carry on completing postsecondary education. Only 37.2% of relevant age, manage to complete upper secondary (Clark, 2014). Respondents with employed status contribute the highest percentage (54.2%). Kota Bharu is the municipal capital of Kelantan and one of fast developing cities in east coast of Peninsular Malaysia (Fadzil *et al.*, 2008).

The results of this study indicated that there were no significant differences in knowledge, attitude, and perception towards allergic reactions of paracetamol between different age groups. One study showed that, American and British adolescents' knowledge about side effects of paracetamol was poor (Wirtz *et al.*, 2009). It was relevant that there was no significance difference between knowledge and age, attitude and age as well as perception and age. This may be due to no exposure regarding allergic reactions to paracetamol case yet.

Knowledge, attitude, and perception towards allergic reactions of paracetamol were not associated with academic qualification. Our present study showed that whether the respondent was either masters/ PhD, degree, pre-university/ diploma holders or with high school certificate, there were no differences regarding knowledge, attitude and perception towards allergic reactions of paracetamol. A study conducted among student demonstrated basic understanding and lack of awareness of the risk, contraindications and type of analgesic contained in popular analgesic brands (Golar, 2011). This is proven by low score on knowledge-based question (Golar, 2011). It may be due to no wide exposure regarding allergic reactions to paracetamol case or reports. Other reasons include lack of cooperation and communication by healthcare professionals and patients, lack of time and proper management, lack of awareness of staff and patients and no qualified person to report ADRs (Alsaleh *et al.*, 2017).

This study was conduct using an English version questionnaire. Nevertheless, it is still possible to translate the questionnaires into Malay version. As most of general population in Malaysia used Malay as their communication language, so, it is appropriate to further continue this study by translating it into Malay version. Besides, it is very advisable to conduct study of knowledge, attitude and perception towards allergic reactions among general population in other different setting or around Malaysia. Thus, a clear picture regarding knowledge, attitude and perception towards allergic reaction of paracetamol for general population in Malaysia can be determined.

CONCLUSION

This study showed that currently, general population in Kelantan have poor knowledge, fair attitude and negative perception as regards to allergic reactions of paracetamol. It is worrisome that the respondents in this study are not very confident about their knowledge, attitude and perception towards allergic reaction of paracetamol as paracetamol is a most commonly medication that being used. The results obtained in this survey demonstrated that there is a lot of room for improvement of patient's knowledge, change in their attitude and perception towards allergic reactions of paracetamol. These results may lay a basis for conducting a well-organized, planned and structured educational program to upgrade and change people's current thinking regards to allergic reactions of paracetamol.

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