Knowledge, awareness and practice regarding familial hypercholesterolaemia among primary care physicians in Malaysia: The importance of professional training

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HIGHLIGHTS

- The first study which determined FH knowledge, awareness and practice (KAP) among Malaysian primary care physicians (PCP) using a valid and reliable tool, and compared FH KAP between PCP with postgraduate qualification (PG) qualification and those without.
- Malaysian PCP were good in defining FH and considered themselves as the most effective healthcare provider in early detection of FH.
- Gaps were found in knowledge on prevalence, inheritance and risk of CAD; awareness of clinical guidelines and diagnostic criteria; and practice on CAD risk stratification.
- PCP with PG qualification have better KAP regarding FH compared to those without.
- This study supports the need for compulsory vocational training for all Malaysian PCP where educational module on FH can be included.

ARTICLE INFO

ABSTRACT

Background and aims: This study aimed to determine knowledge, awareness and practice (KAP) regarding familial hypercholesterolaemia (FH) among Malaysian primary care physicians (PCP), and to compare KAP between PCP with postgraduate qualification (PCP-PG-Qual) and PCP without PG qualification (PCP-noPG-Qual).
Methods: This was a cross-sectional study involving PCP with ≥1-year working experience in Malaysian primary care settings. An adapted and validated 25-item FH-KAP questionnaire was disseminated during primary care courses. Total score for each domain was calculated by summing-up the correct responses, converted into percentage scores. Normality distribution was examined and comparisons of mean/median percentage scores were made between the two groups of PCP.
Results: A total of 372 PCP completed the questionnaire. Regarding knowledge, 77.7% correctly defined FH. However, only 8.3% correctly identified coronary artery disease risk in untreated FH. The mean percentage knowledge score was significantly higher in PCP-PG-Qual compared to PCP-noPG-Qual (48.9, SD ± 13.92 *vs.* 35.2, SD ± 14.13), $t(370) = 8.66$, $p < 0.001$. Regarding awareness, 39% were aware of the NICE FH guideline and only 27.2% were aware of FH diagnostic criteria. The median percentage awareness score was significantly higher in PCP-PG-Qual compared to PCP-noPG-Qual (15.4, IqR ± 23.08 *vs.* 7.7, IqR ± 11.54), $p = 0.013$. Regarding practice, only 19.1% stratified FH patients as high risk irrespective of other risk factors. The mean percentage practice score was significantly higher in PCP-PG-Qual compared to PCP-noPG-Qual (52.4,

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SD $\pm$ 12.92 *vs.* 42.7, SD $\pm$ 16.63), t(370) = 9.65, *p* < 0.001.

Conclusions: Substantial gaps in FH-KAP among Malaysian PCP were identified, with PCP-PG-Qual having better knowledge, awareness and practice than PCP-noPG-Qual, emphasising the importance of professional training and certification.

1. Introduction

Familial hypercholesterolaemia (FH) is an autosomal dominant disorder characterized by markedly elevated low density lipoprotein cholesterol (LDL-c) level, commonly caused by mutations in the LDL receptor pathway [1]. Clinically, FH presents in two forms, namely, heterozygous FH (HeFH) and homozygous FH (HoFH) [1]. If left un-treated, the presence of premature atherosclerotic coronary artery disease (CAD) among HoFH is unequivocal, whereas HeFH carries 50% CAD risk by the age of 50 years in males and 30% by the age of 60 years in females [1].

The prevalence of HeFH is estimated to be 1 in 200 to 1 in 500 in several populations worldwide [2–5]. In Malaysia, with a population of 31.7 million [6], it is estimated that 63,400 (1 in 500) to 158,500 (1 in 200) individuals may be affected by HeFH. However, the majority of them are still undiagnosed [7,8]. This may be one of the contributing factors to the emerging premature CAD in Malaysia, where there is a trend towards a younger age at first myocardial infarction [9], and higher cardiovascular mortality than in developed countries [10]. The under-diagnosis of FH remains a major concern as these individuals are denied early treatment, which is paramount to reduce their CAD risk. Therefore, effective strategies for early detection of FH must be in place to ensure early appropriate management is offered in accordance with the current available guidelines, so that they can be assured a normal life expectancy [3,11].

Primary care physicians (PCP) are well placed to play a vital role in early identification and management of FH [12–14]. However, their knowledge, awareness and practice (KAP) regarding FH have been shown to be suboptimal [15–21]. In the Asia-Pacific region, less than half of the PCP were aware of national or international clinical guide-lines [20]. Significant gaps were also found in their knowledge of prevalence, inheritability, diagnostic criteria and CAD risk of FH [20].

In Malaysia, PCP can potentially play a major role to detect and manage FH. They are well positioned in the front line of primary care service, which is divided into the public and private sectors. The public sector is served by 0.52 PCP per 10,000 populations, whereas the pri-vate sector is served by 2.37 PCP per 10,000 populations [22]. How-ever, the majority of PCP in Malaysia do not hold postgraduate (PG) qualifications in primary care or family medicine [22]. PCP without PG qualification are often known as Medical Officers (MO) if they are working in the public sector or General Practitioners (GP) if they are working in the private sector. Those who received formal training and hold recognised qualifications are known as Family Medicine Specia-lists (FMS) and they are registered in the National Specialist Register (NSR) [23]. In the current settings, PCP in Malaysia are already managing common chronic diseases such as hypercholesterolaemia, hypertension and diabetes [24]. However, their role in the care of FH has not been adequately defined.

The study by Pang et al. has already included 219 Malaysian PCP in the assessment of FH KAP as part of the 'Ten Countries Study' [20] using the 19-item FH KAP questionnaire developed by Bell et al. [15]. To further extend this finding, we have adapted this questionnaire and applied it to the local Malaysian context as a 25-item questionnaire and validated it among PCP. Therefore, this study aimed to determine KAP regarding FH among Malaysian PCP, using a comprehensive, valid and reliable tool, and to compare the KAP between PCP with PG qualifi-cation and PCP without PG qualification.

Table 1
Summary of the FH KAP questionnaire adaptation and validation.

Methods		Description
Content validation and adaptation	• Conducted by an expert panel: 3 FMS (who were familiar with clinical care of FH), 3 chemical pathologists (who run a lipid specialist clinic) and 1 public health specialist (who had broad experience in questionnaire validation method). • Relevance of each questionnaire item was reviewed and ascertained whether the contents were appropriate to the study objectives and the local context.	• 7 items were added, 8 modified and 1 item moved to demography. • The adapted questionnaire contained 25 items: 11 knowledge, 5 awareness and 9 practice items.
Face validation	• Conducted by 10 PCP who fulfilled the inclusion and exclusion criteria. • Their understanding of the instructions, contents, wording and general structure of the questionnaire were assessed.	The adapted questionnaire was refined based on their comments and feedback.
Known-groups validation	• The adapted questionnaire was distributed via e-mail for self-administration by PCP. • A total of 130 PCP completed and returned the questionnaire. • Normality of data distribution and the equality of variance were examined. • For normally distributed data, independent *t*-test was applied to compare the mean percentage score of FH KAP between PCP-PG-Qual and PCP-noPG-Qual. • For non-normally distributed data, Mann Whitney u-test was applied to compare the median percentage score of FH KAP between PCP-PG-Qual and PCP-noPG-Qual.	• PCP-PG-Qual had significantly higher mean percentage knowledge score compared to PCP-noPG-Qual (53.5, SD $\pm$ 13.9 *vs.* 35.9, SD $\pm$ 11.79, t(128) = 6.90, *p* < 0.001). The difference between the 2 groups was 17.54 (95% CI: 12.52, 22.57). • PCP-PG-Qual had significantly higher median percentage awareness score compared to PCP-noPG-Qual (15.4, IqR $\pm$ 23.08 *vs.* 7.7, IqR $\pm$ 15.38, *p* = 0.030). The difference between the two groups was 7.69. • PCP-PG-Qual had significantly higher mean percentage practice score compared to PCP-noPG-Qual (69.2, SD $\pm$ 17.62 *vs.* 54.4, SD $\pm$ 19.28, t(128) = 3.79, *p* < 0.001). The difference between the two groups was 14.74 (95% CI: 7.05, 22.44).
Internal consistency reliability	• Responses from 130 PCP were examined using KR-20 reliability coefficient.	• Overall KR-20 was 0.79 - indicated moderate reliability [27].
Test-retest reliability	• Data was collected from 26 PCP after 2–4 weeks following their first response. • Examined using Kappa statistics.	• Average Kappa was 0.796 - indicated substantial agreement [28].