HKU Med School of Clinical Medicine
Department of Family Medicine & Primary Care
香港大學家庭醫學及基層醫療學系

Knowledge, Attitudes, Practices of and Perceived Barriers to Using Point-of-care Ultrasound by Primary Care Physicians in Hong Kong

Amy Pui Pui Ng [1,2], Kiki Sze Nga Liu [2], Zoey Cho Ting Wong [2], Zoe Ho Wai Tang [2], Eric Yuk Fai Wan [2,3], Esther Yee Tak Yu [2], Tai Pong Lam[2]

[1] Department of Family Medicine and Primary Care, The University of Hong Kong-Shenzhen Hospital; 1 Haiyuan 1st Rd, Futian District, Shenzhen, Guangdong Province, China, 518009
[2] Department of Family Medicine and Primary Care, School of Clinical Medicine, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR, China
[3] Department of Pharmacology and Pharmacy, 2/F, Laboratory Block, LKS Faculty of Medicine, HKU, 21 Sassoon Road, Pokfulam, Hong Kong SAR, China

INTRODUCTION

Globally, there is an uptake of the use of point-of-care ultrasound (POCUS) in primary care, but the prevalence of Hong Kong (HK) Primary Care Physicians (PCPs) using POCUS is unknown and qualitative studies on the topic are lacking.

AIM

This study aimed to understand PCP's current practices, knowledge, attitudes, and barriers to using POCUS via a mixed-method.

METHODS

Design: A mixed-method study (a cross-sectional survey, followed by semi-structured interviews)

Subjects: Members of the Hong Kong College of Family Physicians (HKCFP) and/or clinical teachers affiliated with the Department of Family Medicine and Primary Care from University of Hong Kong, were invited to complete an online survey via Qualtrics between 01-02/2022. Semi-structured individual interviews lasting 30min to 1 hour with 14 PCPs, who were selected via purposeful sampling, were carried out until data saturation was reached in English and/or Cantonese between 05-07/2022.

Inclusion criteria: Currently working in primary care in HK or enrolled as a family medicine trainee.

Measures: The survey underwent content validation and 2-week test-retest reliability testing. Survey scales were assessed for internal consistency. Topic guides were modified for the semi-structured interviews after analysis of the survey data.

Analysis: Descriptive analysis was performed for the survey by SPSS version 26.0. Interview recordings were transcribed verbatim and translated into English (if necessary). A thematic approach was used to code the transcripts independently by 2 research team members using NVivo software. Inconsistencies were resolved by discussion with two coders and a third research team member to reach an agreement on a common theme.

RESULTS

330 participants completed the survey with a response rate of 20.8% (Tables 1,2,3). 3 main themes emerged from the qualitative interviews (Figure 1).

Table 1. Socio-demographic characteristics of participants

Factors (count, %, n, N=275)		
Age (mean ± SD), year (n=235)	44.8 ± 11.0	
Female	108	39.3%
Years after graduation from medical school (mean ±SD), year (n=274)[1]	21.3 ± 11.3	
Country of graduation - Hong Kong	229	83.3%
Postgraduate qualification		
Completed Hong Kong Family Medicine Training	119	43.3%
Completed Diploma in Family Medicine	88	32.0%
Current Family Medicine Basic/Higher Trainee	30	10.9%
No postgraduate qualification in Family Medicine	7	2.5%
Others[1]	31	11.3%
Service institution (n=269)		
Public institutions	151	56.1%

SD=Standard deviation. The results were presented as mean ± SD or count and %, as appropriate.
[1]Others: Non-Family Medicine post-graduate qualifications (e.g. Surgery, Medicine, Psychiatry, Emergency Medicine), Family Medicine-related post-graduate qualifications from overseas (e.g. MRCGP) and other diplomas (e.g. Child health, dermatology)

Table 2. Descriptive results of POCUS practice

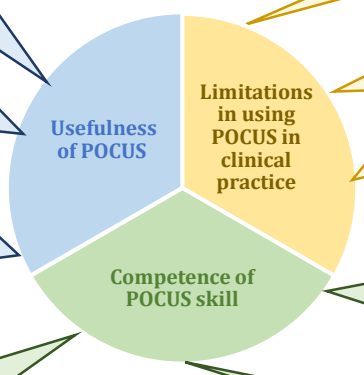
Factors (count, %, n, N=275)		
Current practice location has a POCUS device on-site	102	37.1%
Has **used POCUS in the last 12 months** in their clinical practice	**62**	**22.5%**
Interest of participants in using POCUS in current practice (N=250)		
Yes	**179**	**71.6%**
No	25	10.0%
Not sure	46	18.4%

Table 3. Descriptive results of POCUS attitudes, knowledge and barriers

Factors (count, %, n, N=275)					
Attitude (Range of score = 1 – 4)	Negative attitude[1]		Positive attitude[1]		Mean ± SD
On POCUS training	56	20.4%	**219**	**79.6%**	3.1 ± 0.6
On clinical usefulness of POCUS	21	7.6%	**254**	**92.4%**	3.1 ± 0.5
On harmfulness of POCUS	58	21.1%	**217**	**78.9%**	2.9 ± 0.6
On cost effectiveness of POCUS	58	21.1%	**217**	**78.9%**	2.9 ± 0.7
On patient preference on provider	133	48.4%	142	51.6%	2.5 ± 0.7
Overall mean score[2]					3.0 ± 0.5
Knowledge (Range of score = 1 – 4)[3]					
Overall mean score[2]					**1.9 ± 0.6**
Barriers (Range of score = 1 – 4)	Disagree as barrier[1]		Agree as barrier[1]		Mean ± SD
Competence of POCUS skills	27	9.8%	**248**	**90.2%**	3.2 ± 0.6
Training support	25	9.1%	**250**	**90.9%**	3.2 ± 0.5
Clinical support	29	10.5%	**246**	**89.5%**	3.2 ± 0.6
Financial concerns	81	29.5%	194	70.5%	2.9 ± 0.7
Clinical usefulness	164	59.6%	111	40.4%	2.3 ± 0.8
Overall mean score[2]					3.1 ± 0.4

[1]'Disagree as barrier' and 'Negative attitude' refer to mean score ≤ 2.5; 'Agree as barrier' and 'Positive attitude' refer to mean score > 2.5
[2]Overall mean score refers to the mean of average scores over all the survey questions under particular category (attitude, knowledge or barrier).
[3]Knowledge is defined as continuous variable. Only mean and SD are displayed.

Figure 1. Main themes emerged from the qualitative interviews



Improving diagnosis and management: *"POCUS actually is a good way trying to see whether you can have a quick fix of a simple problem... probably you can get a very good management plan or even you can get a very early advanced appointment from the specialist. " (Public, 20 years postgrad, POCUS user)*

Reducing burdens on patients : *"Makes the whole patient experience smoother, avoid an unnecessary trip to the Imaging Center and ... reduce the cost for the patient as well. " (Private, 13 years postgrad, not POCUS user)*

Reducing burdens on the healthcare system : *"For sure [POCUS] will lessen the burden of referral to emergency departments, if some emergency condition can be ruled out by [POCUS] ." (Public, >10 years postgrad, not POCUS user)*

Lacking confidence for competent POCUS skills and its related problems : *"I don't think I am competent in doing an ultrasonic patient because it's really not... being well covered in my medical education." (Public, 19 years postgrad, not POCUS user)*

Time to use POCUS during the consultation: *"Consultation is like 15 to 20 minutes max. If you did an ultrasound, that will take you like, maybe like 10 minutes. So, you either cut short ... or then you will overrun. " (Private, 9 years postgrad, not POCUS user)*

Concerns on POCUS machine: *"The clinic space in Hong Kong is very limited...to find a space to house this machine that might not be very frequently used, sometimes could be difficult." (Private, 13 years postgrad, not POCUS user)*

No compelling need for POCUS in current practice : *"But for patients who are not so urgent then most likely to play safe, people will also send a patient to have formal ultrasound in the ultrasound department. So it won't make much difference in patient management in the end. " (Public, 19 years postgrad, not POCUS user)*

Radiologist are better skilled at ultrasound : *"They know that family physician...may not be expert of ultrasound findings, so they will feel more confident or more reassuring, to go for a proper ultrasound done by the radiologist. " (Public, >10 years postgrad, not POCUS user)*

Encountering barriers for training : *"You need someone to supervise the trainees to do [POCUS]... I perceived some barriers ... because not many senior family physicians have acquired this skill yet." (Public, 11 years postgrad, POCUS user)*

CONCLUSION

- ✓ Majority of participants in HK are interested and have positive attitudes toward POCUS, but only about a quarter are using POCUS.
- ✓ Overcoming the lack of competence involves providing training support for PCPs, which is also seen as an important barrier
- ✓ To enhance knowledge, competency, and safety, a collaboration between HKCFP and the HK College of Radiologists and joint POCUS clinics between primary care doctors and radiologists are needed.

ACKNOWLEDGEMENTS

This study received funding from The University of Hong Kong "New Staff Start-up Package" and HKCFP Research Seed Fund 2021.

For further information, kindly contact: Dr. Amy NG (amyppng@hku.hk)