



Perceptions of primary care and hospital clinicians on the use of the Ankle Brachial Pressure Index in general practice

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ABSTRACT

INTRODUCTION: Peripheral arterial disease is an increasingly prevalent chronic illness globally. The Ankle Brachial Pressure Index (ABPI) is a well-established, simple, relatively quick and non-invasive assessment useful in diagnosing and quantifying peripheral arterial disease. ABPIs may be currently underutilised in general practice.

AIM: To explore perspectives of health professionals on the role of the ABPI.

METHODS: One-to-one interviews were conducted with health professionals using snowball sampling. Questions centred around interviewees' education on, experience with and view on the usefulness of the ABPI in general practice. Interviews were recorded and used for thematic analysis.

RESULTS: Participants consisted of 13 health-care professionals: nine general practitioners, two vascular surgeons and two allied health professionals. Most general practitioners interviewed identified benefits of ABPIs use in primary care, including aiding peripheral arterial disease diagnostics, management, referral and triage. No general practitioners stated they had ever had formal training in undertaking ABPIs. Two of the nine general practitioners stated regular ABPI use in their practice. Participants who did not use ABPIs identified practical barriers to its use in general practice, including cost of equipment, length of time needed and perceived low patient need to justify cost. All interviewees agreed that there was a role for ABPI use in the community if barriers were overcome.

DISCUSSION: There was consensus among general practitioners that ABPI use is beneficial. Many general practitioners named similar practical barriers to more common use of ABPIs in general practice. They saw a role for ABPIs in primary care, although it may be more practical as a tool for specialised individual clinicians to use for communities, given practical barriers of cost, time and perceived low patient need. Formal training could be considered, as none of the interviewed general practitioners had ever had any.

KEYWORDS: Ankle Brachial Pressure Index (ABPI); peripheral arterial disease (PAD); general practice; referral; venous disease; investigations; claudication; vascular surgery; cardiovascular disease (CVD); nursing; compression bandaging

Introduction

Peripheral arterial disease (PAD) is an atherosclerotic long-term condition of public health importance, which in developed countries, afflicts almost

20% of the population aged >75 years.¹ This number is rising with aging populations and improved treatment, but PAD is often underdiagnosed and undertreated globally.^{2,3} PAD

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WHAT GAP THIS FILLS

What is already known: The Ankle Brachial Pressure Index is effective in diagnosing and quantifying peripheral arterial disease in patients seen in general practice.

What this study adds: General practitioners and secondary care clinicians agree that there is a role for Ankle Brachial Pressure Index use in the community. General practitioners identified practical benefits of aiding diagnosis of peripheral arterial disease, ruling out venous disease management by compression bandaging, improved referral pathways and triaging using objective measures. Barriers to use in primary care include cost, time and perceived low patient need. Suggestions that a general practitioner with special interest or a specialised nurse who could measure Ankle Brachial Pressure Indices for groups of general practices may mitigate some barriers, although more research is needed.

manifests clinically as claudication, restricted mobility or critical ischaemia, and in some individuals, results in limb amputation or death.

The Ankle Brachial Pressure Index (ABPI) is a well-established, efficient, inexpensive and non-invasive assessment used in diagnosing and quantifying PAD.⁴ In this assessment, systolic ankle and arm blood pressures are taken using a Doppler ultrasound to find a numerical ratio between the two sites making up the ABPI value. A normal ABPI value in a healthy individual generally lies between 0.9 and 1.2, as ankle and arm blood pressures should be similar. In symptomatic individuals, ABPIs <0.9 are 95% sensitive in detecting arteriogram-positive PAD and almost 100% specific in identifying healthy individuals.⁵ The smaller the ratio, the more severe the PAD.^{5,6} ABPIs are generally completed to aid in diagnosis of PAD in people with perceived arterial symptoms or to screen and rule out PAD in people with venous disease, to allow for safe use of compression bandaging without exacerbating existing PAD.

Several international guideline documents (including in New Zealand (NZ)) have recommended ABPI use in both primary and secondary settings due to its high specificity in detecting PAD, safety and ease of use.^{5,7,8} Although many studies have reinforced the effectiveness of ABPIs, this tool is underutilised in general practice.⁹ One survey of

91 general practitioners (GPs) working in the United Kingdom found that 69% (63/91) regarded ABPI as a feasible test in primary care, with time constraints and staff availability being the main limitations to its use.¹⁰ The longitudinal usefulness of ABPI in general practice has not been well studied.

Previous research has shown that ABPIs are easily introduced into general practice and can make a significant difference to early diagnosis and management of PAD.^{11,12} However, other studies have recognised practical barriers to ABPI use, with lack of knowledge being a factor restricting use in primary care.^{13,14}

This study aimed to explore perspectives of health professionals on the role of the ABPI in general practice.

Methods

The study design was a qualitative analysis of face-to-face semi-structured interviews, using an approach based on grounded theory. Participants were recruited using a purposive snowball sampling technique, allowing recommendation of stakeholders and professionals with a special interest in the topic to be considered for interview. Included participants were situated in the wider Dunedin area for face-to-face interviews where the interviewer was situated. Sampling was continued until a theoretical saturation point was reached; as long as there was reasonable information saturation was based on a constant comparison method.

Interviews were on average 15 min in length and open questions were based around pre-determined categories. These included prior experience with the ABPI, views on advantages, barriers or challenges to using the ABPI, and the use of ABPI in primary care. Interviews were carried out from June to September 2015 in Dunedin by the same interviewer, who was an honours student. Interviews were audio recorded onto a digital voice recorder and transcribed into text for analysis and coding. All transcribed data were anonymised.

A thematic analysis was completed using a constant comparison method where new or recurrent themes were compared to existing findings as they

emerged from data analysis. Recurrent themes were tagged as codes that then could be grouped into higher-level concepts as these emerged from the data, as per the approach based on grounded theory. An external analyst, another honours student in the same department, was used to independently check and code a random selection of approximately half of the transcribed interviews to reduce observer bias in the analysis period and to improve reliability.

Ethics approval was granted by the Human Ethics Committee, University of Otago (HD14/62).

Results

Interviews with 13 health professionals (participants) were completed. Nine (69%) of the participants were GPs. Four (31%) were health professionals in secondary care, of whom two were vascular surgeons and two were allied health professionals. Several of the participants had other roles in teaching, research, governance and guideline development.

Seven of the primary care participants had some prior knowledge and experience with ABPIs. None said they had ever had any formal training on how to do ABPIs. Of the seven who had some experience, four (31%) vaguely recalled having heard of or seen it being done during their time at medical school. Three (50%) had exposure when they were a house officer. None said they had been formally taught how to do ABPIs. Two of nine professionals in primary care had no previous exposure to ABPIs.

‘I’m sure I saw them at med school but not as house surgeon. I never worked for the vascular team, ... and yeah I never worked with the vascular team so I never saw them in action that way.’ [GP]

‘I think I rang the vascular technicians and just double-checked what sort of thing you could do and I only think they just gave me a verbal description of what they did, and I didn’t think it was too hard so I just did it.’ [GP]

Perceived benefits and advantages of using the ABPI in general practice were discussed. Major themes included being able to diagnose peripheral vascular disease and to be able to check for mixed

vascular disease in patients with venous disease presentations.

‘There’s a lot of overlap between lower leg cramps, pain, restless legs even peripheral neuropathy can be misinterpreted as vascular disease. The ABPI gives you pretty good reassurance that if the ratios are higher than 0.9, you can be pretty comfortable that there are no major blockages of any of the major arteries going down the leg.’ [GP]

‘One [patient]... he must just be 65 now, would have been a few years ago when he presented with intermittent claudication, quite classical you know pain with walking, and resolving with rest, and ... I referred him down there, and he ended up having [ABPIs] and they ended up saying it wasn’t peripheral vascular disease. Whereas if we had availability of doing that, we could have screened him in the clinic and not wasted the resource of sending him down there.’ [GP]

‘Mostly, before we look at putting compression stockings on [which] would be the main way that I use it.’ [GP]

Further, ABPIs were seen as a way to aid referral, helping to triage patients and decrease the burden on secondary care:

‘I think it might strengthen your referral letter... if you show the surgeon you’ve taken their problem seriously and particularly if you are referring to someone who always likes that measure that would be a good reason to do it.’ [GP]

‘If we are doing them out here [referring to general practice] it saves another job in there for them that if they actually test out to be OK here, we don’t need to refer them further. So it leaves a system in the hospital if we are doing them in general practice.’ [GP]

Secondary care clinicians agreed that more information led to a better referral (where information was relevant) and that this improved the quality and overall standard of referrals:

‘There is an issue with waiting times and trying to reduce number of people who don’t necessarily need a specialist assessment having come through... There is no doubt that reducing the waiting list for vascular lab assessment as well as clinical assessment, would improve things.’ [Secondary care clinician]

'It's not good economics for us to be using top end to do stuff [secondary care services] - for [example, whether] you wear stockings or not and there's where I believe your practice nurse and in particular GP should have great confidence in doing [ABPIs].' [Secondary care clinician]

There was also a perception that ABPIs would help enable patients' care to be managed to a greater extent in primary care:

'Clearly being able to do things in your own practice with your own patients, they like that so they don't have to go to the hospital, get their parking, and seeing someone else they don't know, I think that's a good thing.' [GP]

'I think it'd be good to try and do as much as possible in the community.' [GP]

However, only two of the nine GPs performed ABPIs regularly in general practice. GPs who did not perform ABPIs identified several practical barriers. A major limitation included the ABPI taking up too much time, impinging on the time needed to see other patients or work on other important activities:

'You don't have much time [in general practice]. You have people coming through, and you don't want something that's [going to] slow you down.' [GP]

'You've got to balance that with doing [ABPIs] in your consult, as well as not holding up the next person.' [GP]

Further, participants believed that ABPI use and purchasing necessary equipment such as a Doppler ultrasound was too costly to justify use. Other associated costs such as compression bandaging (which resulted for some patients from use of the ABPI) added to the financial burden.

'You [have] got to line up all your hats, your sort of evidence hat, your business hat, you know, can you make a business case to recover that initial cost and all the rest of it?' [GP]

'[There is] a cost factor, because compression bandaging itself is not cheap. So who would pay for this? You know the government at the moment, picks up the cost for dressings and compression bandaging in [secondary care, but] when you go to the GP you have to pay yourself, or you have to pay [for] nursing, and certainly

compression bandaging.' [Secondary care clinician]

Another prevalent limitation included having a perceived low patient need for ABPIs.

'I haven't seen a patient with a good history of claudication for ages.' [GP]

'I don't see all that many people with vascular disease, all my patients are younger and yeah it's not, well peripheral vascular disease I should say.' [GP]

In regards to the overall role of the ABPI in general practice, most acknowledged that it had a role; however, many GPs believed that it was a more specialised tool, and that a GP or nurse with a special interest should be doing the test instead of all GPs or primary care nurses:

'We could refer them to someone [who] would make more sense [to do it] than really qualify everyone to do the job, because it's quite specialised really isn't it?' [GP]

'I wouldn't probably be that inclined to do it myself in clinic because appointments are short but we could train nurses to do it, so I wouldn't see it as a major issue to do it in the practice.' [GP]

'Because we have great practice nurses, I think they'd easily be able to do it, and that would resolve some of the time issues.' [GP]

'I think if you ask everybody to do it, it would be more of an issue with training and quality and standardising outcomes, but if you choose one or two individuals in each practice to, to train to do it, and do them, I think that's probably the way forward. Who does it? I think it is whatever works in the circumstances.' [Secondary care clinician]

Discussion

There was consensus among GPs that ABPI use is beneficial, and many reasons for this were identified, including being able to diagnose or rule out PAD in situations such as perceived arterial symptoms, in the presence of venous symptoms, as well as its ability to aid in minimising unnecessary referrals and help decrease the burden on secondary care services. Practices that use ABPIs could gain an immediate answer to questions regarding patients having PAD or not and resultant referral decisions.

Moreover, interviewees noted that the ABPI values can convey level of severity and urgency to be seen by a secondary care vascular department, minimising waiting times and hence morbidity for their patients. Interviewees noted that where disease is ruled out, unnecessary referrals are not sent and patients can be reassured and treated using conservative management in primary care (or investigated promptly for other diagnoses). Specifically, this means only patients with symptomatic or limiting PAD would be referred and that compression bandaging would begin promptly and safely for patients with venous disease but without PAD in general practice. Doctors would be able to reinforce their clinical decisions to patients through objective ABPI results.

However, many GPs named similar practical barriers to explain why ABPIs are not more commonly done, or why they themselves did not perform the assessment. Barriers included ABPIs taking too much time, being too costly and having a perceived low patient need. Although most interviewees acknowledged the theoretical benefit, the challenges were significant enough to prevent its use in many instances.

Some clinicians interviewed believed that individual nurses or GPs with a special interest could measure ABPIs for a practice or community. ABPIs were discussed by some clinicians as a special skill. Some GPs interviewed had little experience and little confidence in being able to perform and interpret the ABPI themselves, which could have contributed to this view. However, reasoning behind having a specialist clinician perform ABPIs in the community included the ability for GPs to refer to their specialist colleagues easily, mitigating barriers of Doppler costs, time and lack of patient need. One GP likened ABPIs to minor surgical procedures completed in general practice as a specialised skill. Issues of level of reimbursement required for the extra service should be addressed if this is considered to be a 'specialised' tool. However, all interviewees agreed that efforts to increase quality of patient management in primary care should be considered, and ABPIs in general practice could be a way to do so.

Semi-structured interviews allowed a naturalistic enquiry into perceptions on the use of the ABPI in

general practice and gave insight into views and reasoning of participants about why ABPIs should or should not be done in primary care. This method allowed for a flexible, yet focused approach. However, participants were mainly doctors and the study could have benefited from interviewing nursing and more allied health colleagues as well. Even so, saturation of themes was reached after approximately seven or eight interviewees gave similarly themed answers to questions.

In conclusion, interviews with both primary and secondary care health professionals identified a definite role for ABPI use in primary care, as a supplement to good history taking and physical examination. However, many interviewees stated it may be more practical if it became a specialised tool for more specialised clinicians to complete in general practice. Training GPs in using Doppler ultrasounds for ABPIs and in interpretation of results could be useful to increase user confidence. Using ABPIs could save unnecessary referrals, triage important referrals, and improve patient access to immediate treatment in the community.

Similar qualitative analysis could be gathered in both urban and rural centres across NZ to provide a wider range of perspectives on the topic given geographical restriction of this analysis. More discussion into whose role it is to perform ABPIs should be had to inform a more practical approach and cost-effective approach.

Competing interests

Dr Hywel Lloyd was involved with collection of data for this study, was a participant and has been the Director of Informatics at Best Practice Advocacy Centre New Zealand (BPAC).

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