



Evaluation of Preventative Screening for Chronic Disease in a Rural Primary Health Service

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Abstract

Prevention is a key element of primary health care and screening provides the ability to reduce complications and health care burden by early identification of potential disease. There is however little information on the effectiveness or uptake of advice from positive chronic disease screening in rural areas of Australia. This study provides evidence for screening for chronic conditions and uptake of advice to consult their medical practitioner when risk factors were identified.

Community screening in rural Victoria was undertaken with 56 people screened over a six month period from November 2014 to April 2015. Only participants who scored above 12 on the Australian Diabetes type 2 diabetes risk assessment tool (AUSDRISK) who were not regularly engaged with a medical practitioner regarding their diabetes risk or with high blood pressure were asked to participate in the research project. A total of 24 people were screened positive and were advised to attend their medical practitioner. Twenty three participants consented to a follow up interview post participation in screening to determine uptake of advice and outcomes of medical practitioner engagement with a final 20 participants interviewed.

Results demonstrated that the majority of people with a risk of high blood pressure identified during the screening made an appointment with their medical practitioner. Medical practitioners initiated treatment or further testing with these people, ensuring that early intervention would lead to a reduction in complications reducing further burden on the health care system. This early intervention has the potential to avert complications and although the sample was small, it suggests that screening is beneficial and uptake of advice is acted on by those at risk of chronic disease.

Keywords: Screening; Chronic disease; Early intervention

Introduction

Evidence suggests that the engagement of people early is a key to delaying the burdens associated with development of chronic conditions. Interventions in primary health are valuable in assisting the decrease in need for hospitalisations due to chronic conditions and poor management of the same [1,2]. Diabetes is a significant health problem in Australia, but the true burden of the disease is thought to be much greater because many people with diabetes are unaware that they have the condition, or are at significant risk of developing it [3]. It is estimated that as a result of ageing alone, the number of people with type 2 diabetes will double by 2050, while the cost of treating it will quadruple [3]. Diabetes currently accounts for 2.3% of all health care expenditure in Australia [3].

The risk of developing diabetes is measurable. The Australian type 2 diabetes risk assessment tool (AUSDRISK) was developed by the Baker IDI Heart and Diabetes Institute as part of a Commonwealth initiative to assess the risk of type 2 diabetes [4]. The form is a short set of questions measuring lifestyle risk factors and demographic characteristics, only questions that are validated best predictors of the development of diabetes are included in the score. The major factors include age, Aboriginal or Torres Strait Islander status, waist circumference and physical activity.

Similarly, hypertension has long been recognised as an important risk factor for cardiovascular disease and mortality [5]. Hypertension is generally diagnosed, or considered to warrant further follow up, if blood pressure is 140/90 mmHg or higher. The Global Burden of Disease Study (GBD) advocates for prevention, detection, treatment and control of this condition, as a high priority on worldwide health agendas [6]. Hypertension is ranked as the leading single risk factor for GBD, and one barrier identified is the lack of a health care system to identify those at risk for hypertension and cardiovascular disease,

and follow up to monitor and deliver treatment [7]. The most simple diagnostic technique for hypertension is blood pressure measurement using a sphygmomanometer and stethoscope or electronic sensor, taking less than 3 minutes [7].

Health screening programs are a strategy used in populations to identify unrecognised disease, performed on people in apparently good health. Health screening interventions are designed to identify disease early to enable early intervention and management and if possible, prevention. Early intervention also involves determining individual's health literacy, which is broadly defined as the skills to access, understand, appraise and apply health information in order to make judgements and decisions about health care [8]. Although health literacy is now ubiquitous in health care settings, it originated from the field of public health in relation to health promotion and primary prevention [9]. Determining health literacy during the health screening process also sets the scene for the commencement of self-management for clients. A key element of self-management is goal setting, which is defined as an agreement between the clinician and client to achieve the required change for optimal health, taking into consideration an individual's preferences, values and needs to achieve the goal [10]. The World Health Organisation sets the criteria for health screening

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and includes that the conditions screened for should be an important health problem, that it should be treatable, that facilities for diagnosing and treating should be available, and that there should be a test or examination available which is acceptable to the population [11].

There is little, if any, information on the effectiveness of preventative community screening programs, especially in rural settings in Australia, although evaluations of the effectiveness of screening programs in workplace settings have been published [12]. Successful screening programs show evidence that early diagnosis and treatment increases the chance of successfully treating, preventing or managing the disease [13].

A new model of primary health care in rural Victoria, Australia, undertook community health screening for diabetes and hypertension, as do many community health programs. As a new model of care, management were interested to evaluate the effectiveness of community health screening for these conditions – did the population who were identified at risk of diabetes (using the AUSDRISK tool) and those with a blood pressure reading above 140/90 mmHg, seek further evaluation from their medical practitioner? If they did, what was the outcome? If they did not, what barriers prevented further health seeking? The study utilised qualitative and quantitative methods to determine the outcome of the community health screening.

Methodology

The geographical area of the study has a population of 9,486 people spread over an area of 3,302 square kilometres, with three major townships. The townships, vary in population size from 3,100 to 1,080 people [14]. Agriculture is the primary industry in the shire, with a known ageing population and high rates of chronic disease [15]. Apart from the new model of primary health care, there are no publicly funded health agencies in the geographical area.

Participants were recruited in various community settings, including community events and strategic positioning of primary healthcare staff in the three small townships (such as outside local supermarkets). Participants were invited to undertake health screening using the AUSDRISK tool and blood pressure measurement.

Community Health Staff administered the AUSDRISK and measured blood pressure of participants who agreed to health screening. Participants were screened in a seated position. Answers to the AUSDRISK are scored, with a score of 5 or less indicating low risk, 6-11 an intermediate risk and 12 or more high risk.

Participants who were not currently receiving regular care from

their medical practitioner and who scored above 12 on the AUSDRISK or who had a blood pressure reading above 140/90 mmHg, were advised to seek further evaluation from their medical practitioner and invited to participate in the research study. A plain language statement describing the study and contact information for the researcher was provided to all participants who consented. The plain language statement indicated that the participants would be contacted in one month's time to arrange a mutually suitable time to conduct a telephone interview, and to give further consent to participate or withdraw from the study.

Results

A total of 56 people were screened over a six month period. Of the 56 people screened 24 participants were not eligible, 19 of these were already regularly engaged with their medical practitioner. Of the remaining 32 participants identified, 24 were referred to their medical practitioner for follow up (75%). Of the 32 eligible participants;

- 13 recorded an elevated blood pressure (40.6%),
- 1 recorded an irregular pulse (3.1%), and
- 18 recorded an AUSDRISK score above 12 (56.3%).

Of the 24 participants referred to their medical practitioner, 23 (95.8%) agreed to follow up interview by the University of Melbourne researcher. The principal researcher, a nurse and research academic, contacted the consenting participants by telephone. Of the 23 participants who agreed to interview, three could not be contacted leaving a sample of 20 participants. A total of 67 phone calls were made to complete interviews (median 3.3 per person).

Participants who consented were telephoned by the researcher approximately one month after the community screening. After agreeing to an interview time, they were asked three questions – did they visit their medical practitioner as recommended? If they did, what was the outcome of that visit? If they did not, why not? Participants were invited to comment further, but no medical advice was offered by the researcher as there was no existing client/clinician relationship.

Demographic characteristics of the 20 consenting participants are shown in (Table 1). Of the 20 participants, seven had elevated blood pressure, one an irregular heart rate, nine had an AUSDRISK score greater than 12 and the remaining three had both high blood pressure and an elevated AUSDRISK score (Shown in Table 1).

Two participants (10% of the total sample) reported that they did not visit their medical practitioner as recommended. The remaining 18 participants did visit their medical practitioner. The two participants

		n (%)				
Gender	Male	9 (45)				
	Female	11 (55)				
Age (years)	Range	Median (IQR)				
	18-86	60.1 (43-81)				
			Did not visit medical practitioner as recommended	Visited medical practitioner	Further investigation	Further treatment
		n (%)	n (%)	n (%)	n (%)	n (%)
Blood pressure 140/90 or greater		7 (35)	0	7 (100)	7 (100)	5 (71)
AUSDRISK score 12 or greater		9 (45)	2 (22)	7 (77)	3 (43)	0
Irregular heart rate		1 (5)	0	1 (100)	1 (100)	1 (100)
Combined elevated blood pressure and AUSDRISK score		3 (15)	0	3 (100)	3 (100)	3 (100)

Table 1: Demographic characteristics of 20 consenting participants and screening outcomes.

who did not visit their medical practitioner both had elevated AUSDRISK scores as reasons for referral. Both participants provided reasons for not attending their medical practitioner as follows:

"sick of seeing doctors and being treated for so many things. I rattle"

And

"I've had so much wrong with me and it's hard to get around when I don't drive. I have a new doctor and I'm not sure what he's like."

The participant with the irregular heart rate reported that blood pressure medication was increased and specific cardiovascular disease testing was undertaken as a result of her visit to the medical practitioner. As shown in (Table 1), of the participants with elevated blood pressure, two had increases in blood pressure medication, one had medication changed to another type, two were referred to a specialist (one of whom additionally commenced medication) and two had blood tests which resulted in normal results so no further action was taken by their medical practitioners. One of these participants commented that they were happy to have had the screening undertaken.

Of the three participants that had both elevated blood pressure and AUSDRISK scores, two were commenced on new blood pressure medications and one had an increase to cholesterol medication (shown in Table 1).

Of the participants with elevated AUSDRISK scores, three had fasting blood glucose tests with no abnormalities detected and no-one reported any changes to treatment by their medical practitioner (shown in Table 1). Three participants commented that although no further action was taken by their medical practitioner for their elevated AUSDRISK score, they themselves had implemented lifestyle changes as a result.

Discussion

There are very few, if any, similar studies reporting on the outcomes of screening of this kind in the community, particularly in Australian rural communities for comparison of the uptake rates. The uptake proportion of 90% is extremely pleasing in terms of preventative care demonstrating participants desire to achieve healthy lifestyles. An indication of the acceptability of the recommendation of those at risk making an appointment with the medical practitioner was clear, with the majority of those recommendations being taken up.

The two participants who did not visit their medical practitioner both had elevated AUSDRISK scores. One confirmed that travel and access to medical care was a potential barrier, which is widely recognised in the literature as problematic in rural settings [16]. This participant also reported that the relationship with their medical practitioner was new and not fully established.

An interesting result of these interviews was the finding that those with high blood pressure or irregular heart rate had increases in or commenced on medication whilst those with elevated AUSDRISK scores were offered blood testing which resulted in no formal treatment.

Although small, this sample provided some insight into the value of community screening for high blood pressure. Although the value for those with an increased AUSDRISK score was not as clear, due to the long term prediction risk, participants comments suggest that the screening itself was impetus for modifying risk factors in their lifestyle.

Limitation

A limitation of the study is that only de-identified information from

the interviews could be provided back to the clinical team, to protect participant's anonymity. This means that the two participants with an AUSDRISK score above 12 who did not visit their medical practitioner as advised, could not be followed up – though this was not the aim of the study. The study simply sought to identify compliance with advice from community health screening, and the outcomes for those who did comply. It was ethically outside the scope of the study to provide further advice to participants at the time of interview as there was no clinician/client relationship.

Conclusion and Recommendations

Most participants, who agreed to undertake health screening in a community setting, sought further evaluation if they were advised to, due to their high risk of diabetes or hypertension. The screening enabled early intervention for those with hypertension but the value for those with a high risk of diabetes is uncertain. It should be remembered that the AUSDRISK tool predicts five year risk of diabetes and that those with a score above 12 warrant continued advice and observation [4].

The results suggest that community screening for hypertension is a valuable use of health resources to implement early intervention which may prevent complications related to this untreated condition.

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