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## RESEARCH ARTICLE

# THE ROLE OF A PHARMACIST TO RAISE AWARENESS IN THE MANAGEMENT OF HYPERTENSION

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Hypertension, Community Pharmacy,  
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### ABSTRACT

**Introduction:** Community pharmacies are generally a first point of contact with 1.6 million people visiting a pharmacy in England each day. Pharmacists are defined as experts in medicines. The role of a pharmacist has advanced from 'product-focused' through medicine to a 'caregiver' where they provide person-centred care to ensure suitable prescribing. As highlighted by Mark Koziol, chair of the Pharmacists' Defence Association, the profession of pharmacy is not only to handle prescriptions but to take an interventionist approach to move into a population health management role and save the United Kingdom healthcare industry millions of pounds.

**Aim:** The aim of this project was to identify peoples' perspective, on hypertension and the role of a pharmacist to manage hypertension.

**Methods:** A mixed-methods health promotion study, questionnaire-based, followed by measurement of their BP, the study was conducted at the University of Wolverhampton (UoW), city campus. The sample was achieved through verbally inviting all those passing by the Millenium City Building main entrance (n=50).

**Results:** Of the participants 50% were not aware of the free BP screenings offered in local pharmacies and 90% had never visited their local pharmacy for BP services. Although, the majority of the participants had adequate knowledge about the recommended BP reading and the complications of long-term hypertension, but the utilization of the services community pharmacies offered and their general knowledge about prevalence hypertension were minimal. **Conclusion:** Blood pressure screening currently occurs in a small number of community pharmacies and the utilization of this service remains low. The public is in favour of receiving health support and services from the pharmacists in the community setting, therefore; pharmacists should take this opportunity and consider increasing their blood pressure measuring services.

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## INTRODUCTION

Public Health England, (2017) emphasises that pharmacists have a major role in the National Health Service (NHS) due to the advances in access and opportunities to promote healthcare services to the public. These opportunistic interventions include; healthy living pharmacy screening, NHS health check, smoking cessation and blood pressure management.

**Hypertension:** The National Institute of Health and Care Excellence (NICE) defines hypertension as a blood pressure of greater than 140/90mmHg. To confirm the diagnosis of hypertension, two to three readings are required, with a minimum of three minutes rest in between and the average is

then calculated. The prevalence of hypertension (HTN) has significantly increased with an estimated >5.5 million individuals remaining undiagnosed in the UK (Public Health England, 2017). If blood pressure (BP) is elevated to an extent, undiagnosed and untreated the blood vessels become susceptible to plaque build-up therefore, resulting in numerous complications (Table 1). The causes of hypertension (HTN) are classified into primary and secondary. Primary or essential HTN is present in 90-95% of cases as the underlying cause not due to medical illness (Dyker, 2012). It takes into account genetic factors, with HTN being more common in individuals of African/Caribbean and South-Asian origin and can be exacerbated by increased salt intake, obesity and high alcohol consumption (British Heart Foundation, 2015).

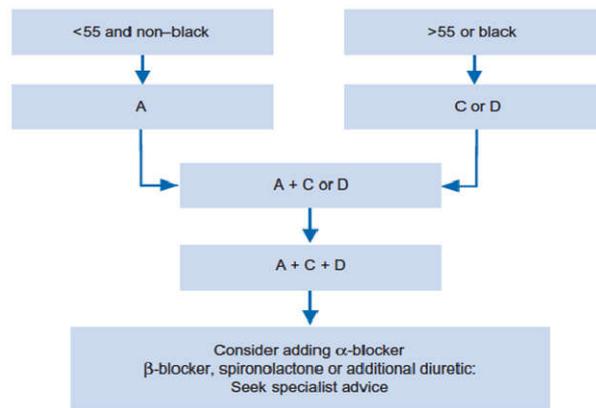
Secondary HTN accounts between 5-10% of cases where the underlying cause of HTN is medical illness or certain medications. HTN is often termed the ‘silent killer’ because there are no symptoms; HTN can remain undiagnosed and untreated. Adults are offered a period of 24hr ambulatory blood pressure monitoring (ABPM) to further confirm the diagnosis of hypertension and or to remove the possibility of the so-called ‘white coat’ syndrome (increase in BP when measured by health professionals). Lowering BP by 10mmHg reduces the associated mortality and morbidity risks and the increase by same amount may cause cardiovascular and renal complications. Non-pharmacological management is offered to all adults as initial therapy with the exception of severe HTN. There is evidence that change in diet and increased physical activity can be beneficial to reduce BP with or without medication (NICE CG127, 2016). There are four treatment steps for HTN; age and ethnicity factors are taken into account for antihypertensive drug to initiate (Figure 1).

**Importance of Public Awareness:** The World Health Organisation (WHO) emphasizes HTN as the most preventable cause of mortality and morbidity (Dyker, 2012). Each 10mmHg reduction in blood pressure was associated with a 27% reduction in stroke and 13% in all-cause mortality(PHE, 2017). HTN costs the NHS over £2.1billion annually so raising awareness of early detection and management through health promotion can prevent health inequalities and cost to the NHS. Petersen and Benzeval (2016) showed men (73.6%) were three times more likely to have untreated hypertension than women (26.4%).

**Benefits of Screening:** Public Health England (PHE) emphasises HTN costs to the wider economy and room for improvement. Their ‘Tackling high blood pressure action plan,’ summarises the contribution through raising awareness, and the right approach can help achieve better detection, prevention and management (Table 2). Tompson *et al.*, (2017) reported that General Medical Practitioners have adopted self-screening facilities for patient use. The study points out the benefits of BP screening in the clinical reduction of blood pressure, promotion and education to propose an increase in awareness amongst non-users of self-screening facilities. Fleming *et al.* (2015) supported this finding by evaluating the effectiveness of community-based screening by pharmacists as an opportunity to increase routine detection outside the General Practice as hypertension is predominantly detected through blood pressure measurement. Tompson *et al.* (2017) additionally advocated that self-screening allows individuals to better understand HTN through positive empowerment. The key outcomes focused on patients’ experience on measuring their own BP; 37% preferred self-screening due to improved accessibility. The study indicated written advice was more effective at increasing knowledge and understanding of HTN management but did not lead to improved BP control. A study compared two intervention groups who received education through the standard care and through interactive SMS text-message reminders (Bobrow, 2014). The primary outcome benefits included: a slight change in BP reduction over 12 months, improvements and adherence on the collection of medicines, therefore, controlling BP. People with Hypertension rarely experience symptoms that make them feel un-well (Pharmaceutical Journal, 2017). The Pharmaceutical Journal highlights improving patient access to pharmacist-led community clinics as a “key-driver” in community health (Albasri *et al.*, 2017).

**Table 1. Complication of long-term undiagnosed hypertension (NHS, 2016)**

Organs affected	Long-term complications of hypertension
Heart	Myocardial infarctions, angina, heart failure
Kidneys	Kidney disease
Brain	Stroke, vascular dementia
Eyes	Vision problems, blindness

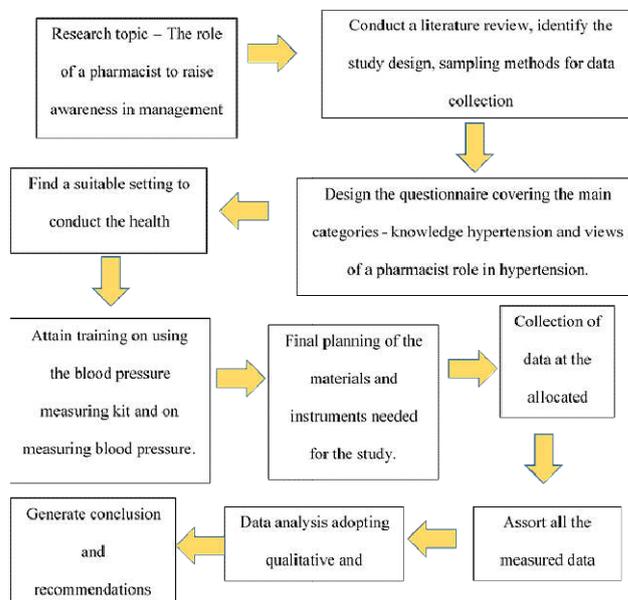


A = ACE inhibitor; C = calcium channel blocker; D = diuretic

**Figure 1. Algorithm of antihypertensive treatment in hypertension (Dyker, 2012)**

**Table 2. Outlines the cost reduction by tackling high blood pressure (PHE, 2018)**

	Years	Lives saved	Costs saved
Prevention	10	45,000	£850 million
Detection	10	7,000	£120 million
Management	10	7,000	£120 million



**Figure 2. Outline of the study design**

Furthermore, in the UK, most of the population have access to local pharmacies within a 20-minute walk where access is even greater in highest-deprived cities which is an advantage as no appointment is needed (Todd, 2014). In 2017, an audit concluded that 59.42% HTN medication-related issues were detected in community pharmacies which led to 30,169 BP measurements by community pharmacists (Robinson, 2019).

**Questionnaire Development and Design:** Single answer, multiple choice questions (MCQ's) were selected as being the simplest for all types of participants. The questionnaire was divided into two parts; demographic and knowledge. The demographics section included gender, age group, ethnicity, occupation and social histories such as alcohol consumption, smoking and exercise. The principal purpose of the demographic questions was to recognise patterns in their perception and understanding of the role of a pharmacist in the management of HTN. The second part aimed to measure the participants' level of knowledge related to HTN, antihypertensive medications and awareness of the pharmacist role in HTN management. Questions regarding management and medication were drawn from WHO hypertensive patient questionnaire (WHO, 2011).

**Participant criteria and procedures:** This was a one-day health promotion study which targeted students from various courses and university staff, academics and support staff. The sample target was a minimum of 50 participants.

**Aim:** The aim of this project was to inform on the local population level of knowledge about HTN and to raise awareness of community pharmacy blood pressure measuring services.

## Objectives

The objectives of this research were to:

- Provide a pharmacist and pharmacy student manned station in the food area at the university to engage the public to talk about HTN.
- Raise the university population awareness about HTN.
- Measure blood pressure and explain the meaning of the readings

**Study Design:** This was a mixed-method health promotion study, questionnaire based with blood pressure measuring and education intervention (Figure 2).

**Ethical Consideration:** Ethics approval for this study was obtained from the University of Wolverhampton Ethics Review Board (2HM-221018). The participants' return of a completed questionnaire was considered as their implied consent for this part, whilst verbal consent was taken prior to the blood pressure measurement.

**Data analysis:** Responses collected from the questionnaire and the BP measurements were collated into a master sheet and bar graphs using Microsoft Excel™ 2015 for analysis.

**Demographics Results:** A total of 50 participants were included in the study (Table 3). As the sample was not gender, age, occupation or ethnicity balanced all data was analysed in percentage rather than count. Most participants were female and aged between 18-29 years old. Majority of the participants were students (58%).

## Analysis of Questions Responses

### Part A – Demographics

**Question A1:** Overall, majority of participants' response was 'No' to drinking alcohol (60%). More female (48%) than male

participants aged 18-29 (23.5%) did not drink alcohol. There was 24.2% of Asian females responded 'No' to drinking alcohol followed by black (18.1%), white (15.1%) and other ethnic groups (6%). As for males, 29.4% of white males responded 'No' whilst the Asian and black males responded equally (11.8%). There were 41.2% males and 33.3% females' students responded 'No' to drinking alcohol, vs to 0% males and 9.1% females' professionals.

**Question A2:** Regarding smoking, the most frequent response chosen in the 18-29 category was 'No' by 45.6% of females followed by 24.2% of 30-49 and 9% of 50-59 aged females. Only two age categories in the female group responded 'Yes': 3% 30-49 and 18.9% of the 18-29 groups. As for males, 47.1% aged 18-29 choose 'No' followed by 23.5% 30-49 and 11.8% 60-69 to smoking; and 11.8% of male aged 18-29 and 5.9% aged 50-59 responded 'Yes' to smoking. Majority of white (58.9%) male responded 'No' followed by 17.6% black and 11.8% Asians to smoking. Equal number of males (35.3%) and females (15.2%) students followed by 17.6% and 6.1% of professions responded 'Yes' to smoking.

**Question A3:** There was 30% of participants responded as they do not perform any exercise, more details at Table 4.

**Question A4:** Over all responses to the question, 'Have you ever been told by the doctor that you have high blood pressure' are shown below in Table 5.

**Question A5:** Out of all the participants, majority selected 'Not aware' when they were asked if they are aware if their local pharmacy offer a free blood pressure check-up (Figure 3).

**Question A6:** Participants' response to visiting their pharmacy for a BP check-up is listed in table 6, 90% of the participants responded 'No' followed by 2% 'once a year', 2% 'every 6 months, 4% 'every 3-4 months and 2% 'monthly' (Table 6).

**Question A7:** Regarding the participants response to owning a BP monitor at home, 70% of participants responded 'No' whilst, 30% responded 'Yes' to owning a BP monitors at home (Figure 4).

**Question A8:** Figure 5 portrays the public's opinion on which HCP they prefer to measure BP. Majority of participants prefer their doctors (38%) to measure their blood pressure whilst 30% chose 'on my own', 12% chose all options or nurse and 8% responded 'Pharmacists'.

Table 3. Baseline characteristics (n=50)

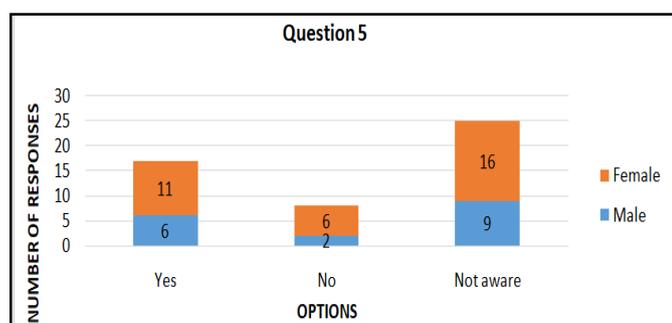
Variables	Male (%)	Female (%)
<i>Gender</i>	17 (34)	33 (66)
<i>Age groups</i>		
18-29	10 (58.8)	21 (63.6)
30-49	4 (23.5)	9 (27.3)
50-59	1 (5.9)	3 (9.1)
60-69	2 (11.8)	0
<i>Ethnicity</i>		
White (English/Welsh/Scottish/British)	10 (58.8)	10 (30.3)
Asian/Asian British	3 (17.6)	10 (30.3)
Black/African/Caribbean/Black British	3 (17.6)	10 (30.3)
Other ethnic group	1 (5.9)	3 (9.1)
<i>Occupation</i>		
Student	12 (70.6)	17 (51.5)
Profession	3 (17.6)	11 (33.3)
Retired	1 (5.9)	0
N/A	1 (5.9)	5 (15.2)

**Table 4. Participants' response to their exercise behaviour**

Age Group	18-29	30-49	50-59	60-69
Daily	2	1	0	1
3 times weekly	4	1	0	1
Once weekly	0	2	1	0
Once monthly	2	0	0	0
Not at all	2	0	0	0
Daily	4	1	0	0
3 times weekly	4	1	1	0
Once weekly	10	4	0	0
Once monthly	2	2	0	0
Not at all	13	1	2	0
Ethnicity	White	Asian	Black	Other ethnicity
Daily	3	1	0	0
3 times weekly	3	1	1	1
Once weekly	1	0	2	0
Once monthly	1	1	0	0
Not at all	2	0	0	0
Daily	1	2	1	0
3 times weekly	1	1	1	1
Once weekly	3	3	3	1
Once monthly	2	0	0	1
Not at all	3	4	5	0
Occupation	Student	Profession	Retired	N/A
Daily	2	2	0	0
3 times weekly	3	1	1	1
Once weekly	4	0	0	0
Once monthly	1	0	0	0
Not at all	2	0	0	0
Daily	1	2	0	1
3 times weekly	3	1	0	0
Once weekly	1	5	0	3
Once monthly	1	2	0	0
Not at all	11	1	0	1

**Table 5. Have you ever been told by the doctor that you have high blood pressure?**

Age group		18-29	30-49	50-59	60-69
Male	Yes	1	0	0	0
	No	9	4	1	2
Female	Yes	0	0	1	0
	No	21	9	2	0
Ethnicity		White	Asian	Black	Other ethnicity
Male	Yes	0	0	0	1
	No	10	3	3	0
Female	Yes	0	0	0	1
	No	10	10	10	2
Occupation		Student	Profession	Retired	N/A
Male	Yes	1	0	0	0
	No	11	3	1	1
Female	Yes	1	0	0	0
	No	16	11	0	5



**Figure 3. Does your local pharmacy offer free blood pressure check-up offer? All responses**

**Part B – Knowledge**

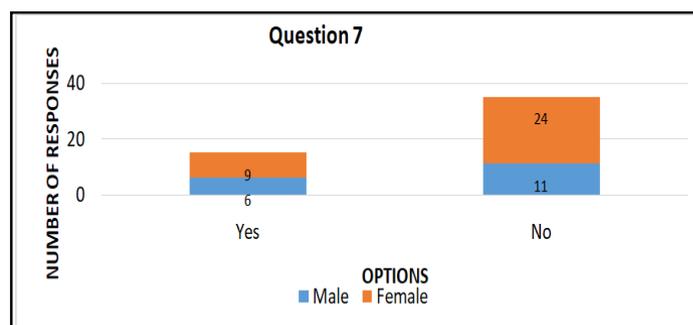
**Question B1:** The correct response for this question was a 'silent killer' (68%) (Figure 6).

**Question B2:** Regarding participants awareness of the possible number of people with undiagnosed hypertension. Only 26% selected the correct answer (5millions).

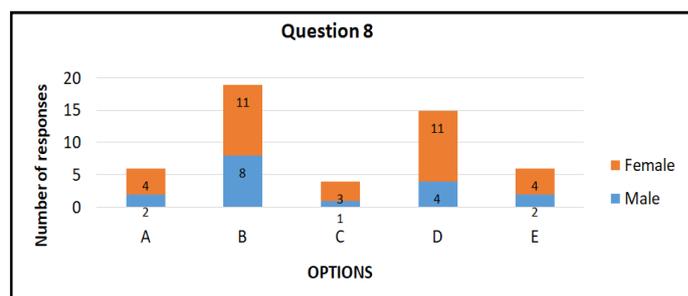
**Question B3:** Table 8 is showing participants perception on normal BP reading. Majority of the participants responded with the correct option of 120/80mmHg (84%) whilst 10% selected 90/60mmHg and 6% chose 140/90mmHg.

**Table 6. Have you ever visited the local pharmacy to have your BP checked? All responses**

Age group		18-29	30-49	50-59	60-69
Male	Monthly	1	0	0	0
	Every 3-4 months	0	0	0	0
	Every 6 months	0	0	0	0
	Once a year	0	0	0	0
	No	9	4	1	2
Female	Monthly	0	0	0	0
	Every 3-4 months	2	0	0	0
	Every 6 months	1	0	0	0
	Once a year	1	0	0	0
	No	17	9	3	0
Ethnicity		White	Asian	Black	Other ethnicity
Male	Monthly	1	0	0	0
	Every 3-4 months	0	0	0	0
	Every 6 months	0	0	0	0
	Once a year	0	0	1	0
	No	9	3	2	1
Female	Monthly	0	0	0	0
	Every 3-4 months	0	0	2	0
	Every 6 months	0	0	1	0
	Once a year	0	1	0	0
	No	10	9	7	3
Occupation		Student	Profession	Retired	N/A
Male	Monthly	1	0	0	0
	Every 3-4 months	0	0	0	0
	Every 6 months	0	0	0	0
	Once a year	0	0	0	1
	No	11	3	1	0
Female	Monthly	0	0	0	0
	Every 3-4 months	2	0	0	0
	Every 6 months	1	0	0	0
	Once a year	1	0	0	0
	No	13	11	0	5



**Figure 4. Do you own a BP monitor at home? All responses**



\* A=all, B=Doctor, C=Pharmacist, D-on my own, E=nurse

**Figure 5. Would you prefer measuring your blood pressure on your own, doctor, pharmacists and nurses? All responses**

**Question B4:** Figure 48 shows public’s response to how often they have their BP checked. 62% of the response was A followed by 36% was B and only 2% of the respondent’s selected the correct option C.

**Question B5:** The correct option was ‘False’. 50% of the participants chose the correct answer whereas, 48% selected ‘True’ and 2% did not answer the question (Figure 8).

**Question B6:** This question was about awareness of the weather family history make a person at risk of having hypertension, there was 88% of the participants selected the correct option ‘False’ (Figure 9).

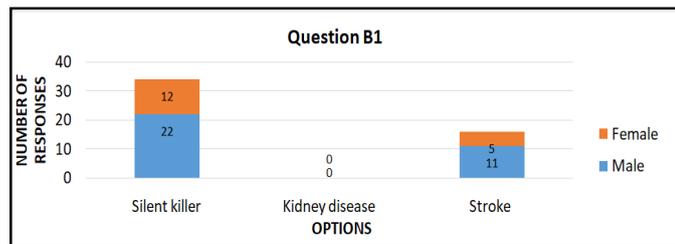


Figure 6. What is high blood pressure known as? All responses

Table 7. Summary of all responses for question B1

Age		18-29	30-49	50-59	60-69
Male	Silent killer	6	3	1	1
	Kidney disease	0	0	0	0
	Stroke	4	1	0	0
Female	Silent killer	14	6	2	0
	Kidney disease	0	0	0	0
	Stroke	7	3	1	0
Ethnicity		White	Asian	Black	Other ethnicity
Male	Silent killer	9	2	1	0
	Kidney disease	0	0	0	0
	Stroke	1	1	2	1
Female	Silent killer	6	7	9	0
	Kidney disease	0	0	0	0
	Stroke	4	3	1	3
Occupation		Student	Profession	Retired	N/A
Male	Silent killer	8	3	1	0
	Kidney disease	0	0	0	0
	Stroke	4	0	0	1
Female	Silent killer	10	8	0	4
	Kidney disease	0	0	0	0
	Stroke	7	3	0	1

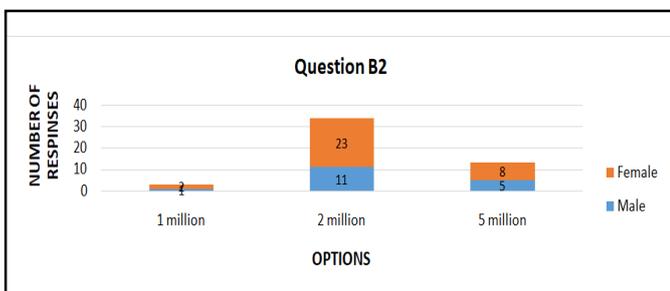


Figure 7. How many people in the UK remain undiagnosed of high blood pressure?

**Question B7:** Figure 10 demonstrate participants’ perception on long-term complications of hypertension. Participants had the option to choose more than one options therefore giving the total of 103 responses. Majority of participants selected option A ‘Stroke’ (36.9%), followed by 34% selected Option B ‘Heart attack’ then 16.5% chose D ‘eye problems’ and 12.6% selected kidney failure.

**Question B8:** Response to the question of how the local pharmacists can offer help with high blood pressure monitoring is showing in figure11. Participants had the option to choose more than one options therefore giving the total of 93 responses. Majority of the participants selected ‘D’ free blood pressure check-up (40.1%) followed by ‘C’ diet advice (36.6%), ‘B’ weight management (32.3%), ‘A’ smoking cessation (26.9%) and ‘E’ NHS Health check (22.6%).

**Question B9:** Figure 12 displays participants’ awareness on management to reduce high blood pressure. Participants were allowed to choose more than option therefore the numbers add up to 103 more than 50 (sample size). Majority of the participants selected option B (37.9%) which was to reduce salt intake followed by 32% selected D (aim to quit smoking), 20.1% selected A (become more active) and 9.7% selected C (drink less alcohol).

**Question B10:** There was 98% of the participants responded they do not currently take antihypertensive medications whereas 2% of the participants take an antihypertensive medication. The name of the medication taken by 2% of female was ramipril.

Table 8. Summary of responses to ‘Which one of the following is the normal blood pressure reading?’

Age		18-29	30-49	50-59	60-69
Male	90/60mmHg	1	0	0	1
	120/80mmHg	9	4	0	1
	140/90mmHg	0	0	1	0
Female	90/60mmHg	1	2	0	0
	120/80mmHg	17	7	3	0
	140/90mmHg	3	0	0	0
Ethnicity		White	Asian	Black	Other ethnicity
Male	90/60mmHg	2	0	0	0
	120/80mmHg	8	3	3	1
	140/90mmHg	0	0	0	0
Female	90/60mmHg	0	1	2	0
	120/80mmHg	9	7	8	3
	140/90mmHg	1	2	0	0
Occupation		Student	Profession	Retired	N/A
Male	90/60mmHg	1	0	1	0
	120/80mmHg	11	3	0	1
	140/90mmHg	0	0	0	0
Female	90/60mmHg	0	1	0	2
	120/80mmHg	14	10	0	3
	140/90mmHg	3	0	0	0

Table 8. Summary of responses to ‘How often should you get your BP checked?’ question

Age		18-29	30-49	50-59	60-69
Male	A	7	3	0	0
	B	2	1	0	2
	C	1	0	1	0
Female	A	15	4	2	0
	B	6	5	1	0
	C	0	0	0	0
Ethnicity		White	Asian	Black	Other ethnicity
Male	A	5	1	3	1
	B	5	1	0	0
	C	0	1	0	0
Female	A	4	8	6	3
	B	6	2	4	0
	C	0	0	0	0
Occupation		Student	Profession	Retired	N/A
Male	A	7	2	0	1
	B	4	1	1	0
	C	1	0	0	0
Female	A	9	8	0	4
	B	8	3	0	1
	C	0	0	0	0

\*A: Every 2-3 months, B: Every year, C: Every 5 years

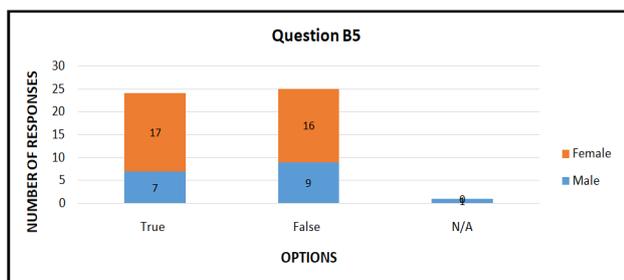


Figure 8. If I am diagnosed with hypertension, I have to take medication for life

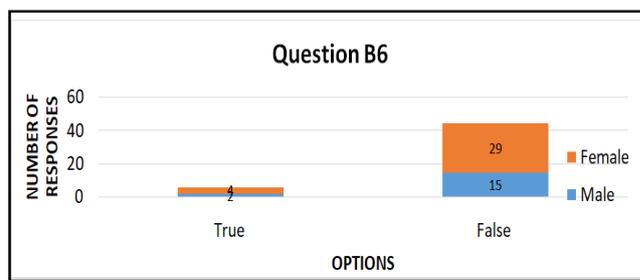


Figure 9. If there is a family history of high blood pressure, there is nothing I can do

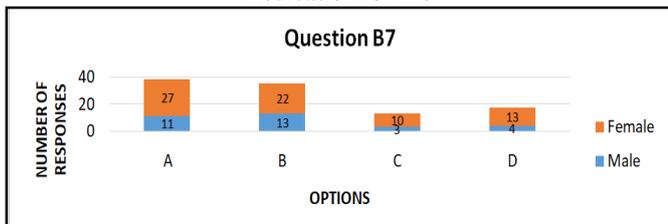


Figure 10. What can long term, untreated high blood pressure leads to?

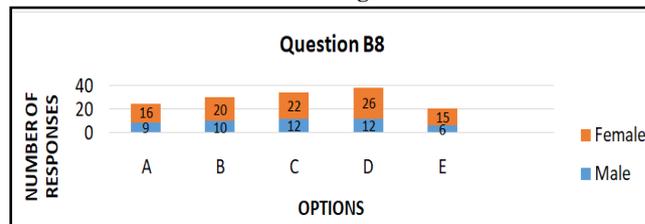


Figure 11. How can the local pharmacist offer to help with high blood pressure?

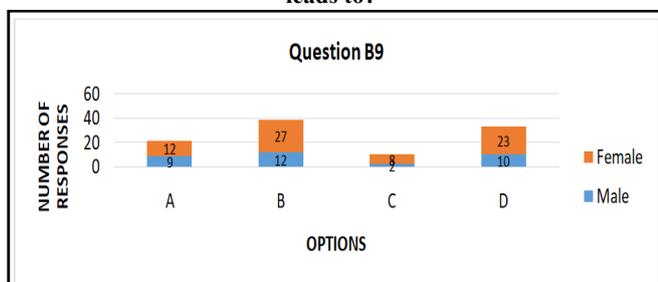


Figure 12. What can you do to reduce the risk of high blood pressure?

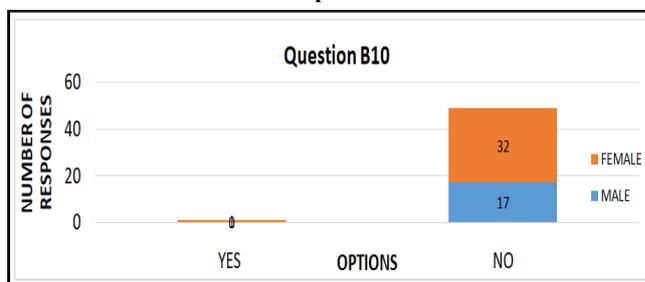


Figure 13. Have you been prescribed medication to lower your blood pressure?

Table 9. Blood pressure and heart rate of the participants from a one-day study at UOW

Study ID	Systolic [mmHg]	Diastolic [mmHg]	Heart rate [bpm]	Study ID	Systolic [mmHg]	Diastolic [mmHg]	Heart rate [bpm]
1	108	65	73	26	132	79	67
2	133	83	43	27	118	79	76
3	121	75	67	28	116	67	78
4	130	86	78	29	104	62	70
5	138	71	90	30	131	61	93
6	133	85	68	31	91	60	75
7	137	84	79	32	142	83	83
8	110	60	63	33	128	87	59
9	129	77	43	34	129	83	75
10	146	86	80	35	108	62	92
11	146	100	103	36	115	68	70
12	113	78	81	37	122	75	73
13	125	73	80	38	129	82	98
14	108	58	70	39	117	81	72
15	116	71	79	40	130	67	77
16	115	72	49	41	122	76	65
17	106	68	67	42	121	78	67
18	112	73	82	43	102	60	91
19	135	89	78	44	104	65	61
20	127	85	70	45	120	77	84
21	112	73	82	46	151	79	75
22	122	67	67	47	106	47	64
23	133	79	80	48	125	81	83
24	121	80	101	49	166	93	86
25	126	83	71	50	115	60	65

**Part C– Blood Pressure Measurement:** The average blood pressure reading was 123/75 mmHg and a heart rate of 75 bpm. 10% of the participants had blood pressure above the high blood pressure (>140/90 mmHg) whilst 56% were normotensive. 34% of the participant’s BP reading indicated pre-hypertensive. The blood pressure was measured after the completion of a two-part questionnaire.

**DISCUSSION**

The purpose of conducting this study was to explore the knowledge of HTN and improve the public awareness of pharmacist role in the prevention, detection and management through patient education. Results from this study highlighted that participants have the general knowledge on the definition

of HTN, lifestyle changes to reduce the HTN risk and its long-term complications. However, a significant number of people are particularly not aware of community pharmacies offering blood pressure check-ups. The answers for part B demonstrated that people have general knowledge about HTN but while they are aware of the services provided by the community pharmacies, they do not fully utilise them. Participants had adequate knowledge about HTN, however, they lacked knowledge and awareness on its prevalence. Almost all participants knew that 'silent killer' is another term used to describe HTN, but there were some who selected 'stroke' as their option. Possible reasons for this can be due to the relation of stroke and HTN emphasised often in the media. The majority of participants were aware of the normal blood pressure reading as 120/80 mmHg. Participants were questioned if their local pharmacies offer a free blood-pressure check-up and whether they have visited to have their BP checked. The data collected indicated half of the participants were 'not aware' of the community pharmacy services. This should raise concerns to whether community pharmacies are advertising their services to the consumers effectively. In terms of age group and gender, a higher percentage of female students, aged 18-29, Asian were less aware than all others. We found that 96% of all participants indicated they have not visited the community pharmacy for any clinical services. Interestingly, only a few participants aged 18-24 years have visited their local pharmacy for a blood pressure check. Research suggests that utilising the so-called self-operated 'blood pressure station' can play a positive impact for patients to receive a free BP check (pharmaceutical Journal, 2013). Tompson (2016), concluded taking BP screening outside of GPs to the public (self-screening) or community pharmacies can promote encouragement for people to be measured.

The results from this study found that the majority of participants did not own a blood pressure monitor and that they prefer doctors or nurses to measure their BP. A lower percentage were aware, but did not find a need to utilise the community pharmacy service to measure BP due to the fact that they getting it measured during their appointments at the GP. Similarly, a small study was conducted using surveys on the public's perception of community pharmacy-based cardiovascular services in Australia; found that people were less aware of BP measuring services provided by community pharmacists (Peterson et al, 2010). Another survey-based study conducted in Liverpool, England found the public was less aware of the pharmacist involvement in providing health advice and screening (Corlett and Krska, 2016). These points out the need for the government, Public Health England (PHE) to support community pharmacies to carry out frequent health promotion and take further action to tackle hypertension. A study carried out on the influence on owning a BP monitor indicated those who self-monitor were keen to have a more in-depth discussion with their healthcare professional about their blood pressure control (Abdullah et al, 2011). One of the aspects of this study was to measure the participants' blood pressure and provide general feedback and interpret their readings. Three new HTN's were discovered and a further two who had previous high blood pressure. One of the participants who were previously diagnosed with HTN stopped taking their medications as they addressed stress was the main cause of their raised BP. These participants were requested to visit their GPs because, during this study, their BP was only measured once. In practice, BP is measured three times and an average is calculated to provide the final reading. Hamilton et al, (2003)

conducted a community-based self-reading where thirteen monitors were placed in different locations in Exeter. The study diagnosed 1.4% of the participants with hypertension and concluded that implementation of self-screening facilities are cost-effective but require additional examination to reduce inequalities. Most of the participants had BP readings above the recommended level 120/80 mmHg which was not expected especially in the students' group. Possible reasons can be due to the stress of completing the questionnaire treating it as a test or the anxiety of having their BP in a public area. Willis et al, (2014) emphasise a community pharmacist is actively involved in providing management services of CVD and have shown positive effects on patient education and chronic disease management. This study revealed that 50% of the participants are not aware of the community pharmacy services and 16% do not know whether their local pharmacy offers free blood check-ups. The study demonstrates that holding a one-day health promotion is feasible and an effective system to detect new cases of hypertension as proved by the results.

**Limitation:** This study had only a small sample (n=50), accordingly the results may not be reflection of the general population. Although the study shows BP screening is feasible and beneficial in the long term, these findings need to be validated with a larger number. Additionally, data collection from people who are diagnosed with HTN and currently taking antihypertensives can provide a better population representation.

## Conclusion

Although, the provision of health promotion targeting hypertension is gradually becoming an integral part of the majority of the community pharmacies clinical services offered to the general public they are not fully utilised. In this study, it can be agreed the general public is receptive of attending services offered by their local pharmacies, when needed. The study has demonstrated a one-day health promotion can make a huge difference in a local population and that continuation of an effective service can help reduce the numbers of those who remain undiagnosed in the UK.

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