Missed opportunities to prevent hypertension at a tertiary care centre in Pakistan

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Abstract

Background: Cardiovascular disease is the leading cause of mortality worldwide, affecting ~1.28 billion adults, and ~46% of these adults are not aware of their condition. One-third of patients do not receive appropriate care for their cardiovascular disease.

Aim: To identify missed opportunities to prevent cardiovascular disease and its associated risk factors.

Methods: This study was conducted among 359 adult patients aged 18–77 years leaving the outpatient department of Civil Hospital, Karachi, Pakistan, during June to September 2020. We recorded their sociodemographic information, perceived duration of clinical consultation, body weight and height, and blood pressure. We investigated if their physicians obtained sufficient medical history, performed medical examination, or counselled them on cardiovascular disease risk factors. Data were analysed using SPSS version 24.0.

Results: Almost all the participants (98%) had at least 1 risk factor for hypertension. Only 35.9% of those in the high-risk group with ≥ 3 risk factors received counselling from a physician about their hypertension, leaving a 37.6% missed opportunity rate.

Conclusion: The frequency of missed opportunities for the prevention of cardiovascular disease, and the risk factors for hypertension were high among the study population. This was partly due to excess workload of the attending physicians; the outpatient departments were used more for the treatment of general ailments than for specialist and referral care. It is recommended to establish primary care clinics within the tertiary settings where cardiovascular risk factors can be evaluated and patients referred for appropriate care.

Keywords: cardiovascular disease, hypertension, tertiary care, prevention, Pakistan

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Introduction

Only 42% of adults with hypertension are diagnosed and treated despite improved screening (1), and only 21% of adults diagnosed successfully maintain control of blood pressure (2). In addition to drug therapy, there are several modifiable and nonmodifiable risk factors associated with hypertension that need to be addressed to control hypertension (2).

Clinical settings are ideal for one-to-one consultation with physicians to prevent, diagnose, and treat noncommunicable diseases and their risk factors. However, the extreme patient load and limited time available for consultation are major barriers to effective physician–patient interaction. Physicians in developed countries spend an average of 17.5 minutes with each patient, compared with 90 seconds in Pakistan and 48 seconds in Bangladesh (3).

Cardiovascular diseases are the leading causes of mortality worldwide and affect both sexes (4). Around 54% of strokes and 47% of coronary heart diseases, globally, are attributable to hypertension (5). Around 80% of cardiovascular deaths occur in low- and middle-income countries such as Pakistan (6). About 1.28 billion adults aged 30–79 years worldwide have hypertension and around 46% of them are not aware of their condition (2).

The objective of this study was to determine the missed opportunities to prevent cardiovascular diseases and their associated risk factors in the outpatient department of a tertiary care hospital in Karachi, Pakistan.

Methods

This study was conducted in a large tertiary care hospital in Karachi, Pakistan from June to September 2020. The research was conducted in accordance with the Declaration of Helsinki and local statutory requirements, and was approved by the Institutional Review Board of the hospital. We conducted exit interviews with adult patients who visited the outpatient department irrespective of their sex and primary complaint. All pregnant women and wheelchair users were excluded.

The participants gave informed consent, and their participation was completely voluntary.

The sample size was calculated based on the percentage of missed opportunities described by James Sheppard, which was 36%, keeping absolute precision at 5% using a sample size formula for proportion in a population through the OpenEpi online software (7). We defined missed opportunity as: "when a respondent was established to have a risk factor in a particular health area but was not counselled about that during the health visit under observation" (8). The following cardiovascular risk factors were assessed during the interview: obesity, diabetes, hypertension, family history of cardiovascular diseases, smoking, alcohol intake, diet, and salt intake. If a risk factor was present and the physician had appropriately advised the patient about that risk factor, then a missed opportunity did not occur. We investigated whether physicians obtained sufficient medical history, performed adequate examination, or counselled their patients for these risk factors. The questionnaire was based on the WHO-identified risk factors for noncommunicable diseases and took 5–10 minutes to complete (9). We also measured anthropometric data, including body weight and height, and blood pressure, using uniform guidelines and proper clinical measures. We calculated body mass index (BMI) and classified patients according to the WHO classification of weight (10, 11).

The data were coded into missed opportunities that occurred in the physician–patient encounter and no missed opportunities occurred according to the operational definition. The $\chi 2$ test was used to compare the patients' characteristics, such as comorbidities and sex, between these 2 groups. Statistical significance was set at 5%. The data were compiled and analysed using IBM SPSS Statistics version 24.0.

Results

Of the 400 patients approached, 359 aged 18–77 years participated in the study, with a response rate of 89.0%. A substantial proportion (91.9%) of patients were female (Table 1). Most of the patients (51.3%) had complaints of epigastric, abdominal, or flank pain, as well as symptoms of vomiting, diarrhoea, or constipation. A quarter of the patients had general complaints such as body aches, fatigue, and fever.

As the number of risk factors increased, the number of patients counselled for hypertension also increased (Figure 1). However, the prevalence of missed opportunity was 37.64% among patients with ≥ 3 risk factors. Among the high-risk group, only 35.96% were counselled for risk factors of cardiovascular disease. The perceived median duration of the clinical encounter was 5 minutes. For the participants whose perceived duration of clinical encounter was > 5 minutes, the missed opportunities decreased to 14.29%.

Most of the patients with known hypertension were taking antihypertensive drugs, with poor compliance, and only 37.7% of these were advised by the attending physician to improve compliance. There were 181 (50.0%) patients with known hypertension, 172 (48.0%) with obesity, and 105 (29.0%) were classified as overweight (Table 1). One hundred and two (28.0%) had both hypertension and obesity. Among the 181 patients with hypertension, 79 (44.0%) did not receive counselling for tertiary prevention of hypertension. Less than 30.0% of patients with risk factors for hypertension received appropriate advice on how to control its progression. Only one third of the patients with known hypertension were counselled for antihypertensive drugs.

Discussion

To our knowledge, this is the first study conducted in Pakistan that reports widespread failure to recognize and address the risk factors for hypertension in an outpatient setting. Based on the responses of the patients about their physician encounters, we conclude that the clinicians faced time constraints for the assessment and counselling on cardiovascular disease and its risk factors, such as waistline and BMI. This study was conducted in a 2000-bed government teaching hospital in Karachi, which catered for a population of 10 million. This possibly contributed to the patient overload and limited number of physicians.

Other international studies have documented low levels of counselling by physicians on cardiovascular risk factors. A study from the United Kingdom of Great Britain and Northern Ireland indicated that 36% of patients were not appropriately treated for cardiovascular risk factors (6). In a previous study, physicians' primary focus for counselling depended on patients' BMI, which is usually a visible factor, and there were missed opportunities for counselling about other important cardiovascular risk factors (12). A recently published study from India estimated that a quarter of the patients with hypertension had missed a diagnostic opportunity at a health facility in the previous year (13). This shows that missed patient counselling by attending physicians is a universal issue in the clinical setting. Some of the frequent obstacles to providing adequate treatment include lack of time, excess workload, conflicting demands, and perceived patient resistance (14). Generally, the clinicians working at government hospitals in Karachi have little or no access to patient medical records at the time of outpatient consultation.

WHO emphasizes the importance of early diagnosis of cardiovascular disease for its effective treatment; therefore, general practitioners must increase patient counselling about lifestyle modification (15). The pervasive presence of low educational level, cardiovascular disease, and its risk factors among our participants demands appropriate patient education strategies to counter the epidemic of noncommunicable diseases (16).

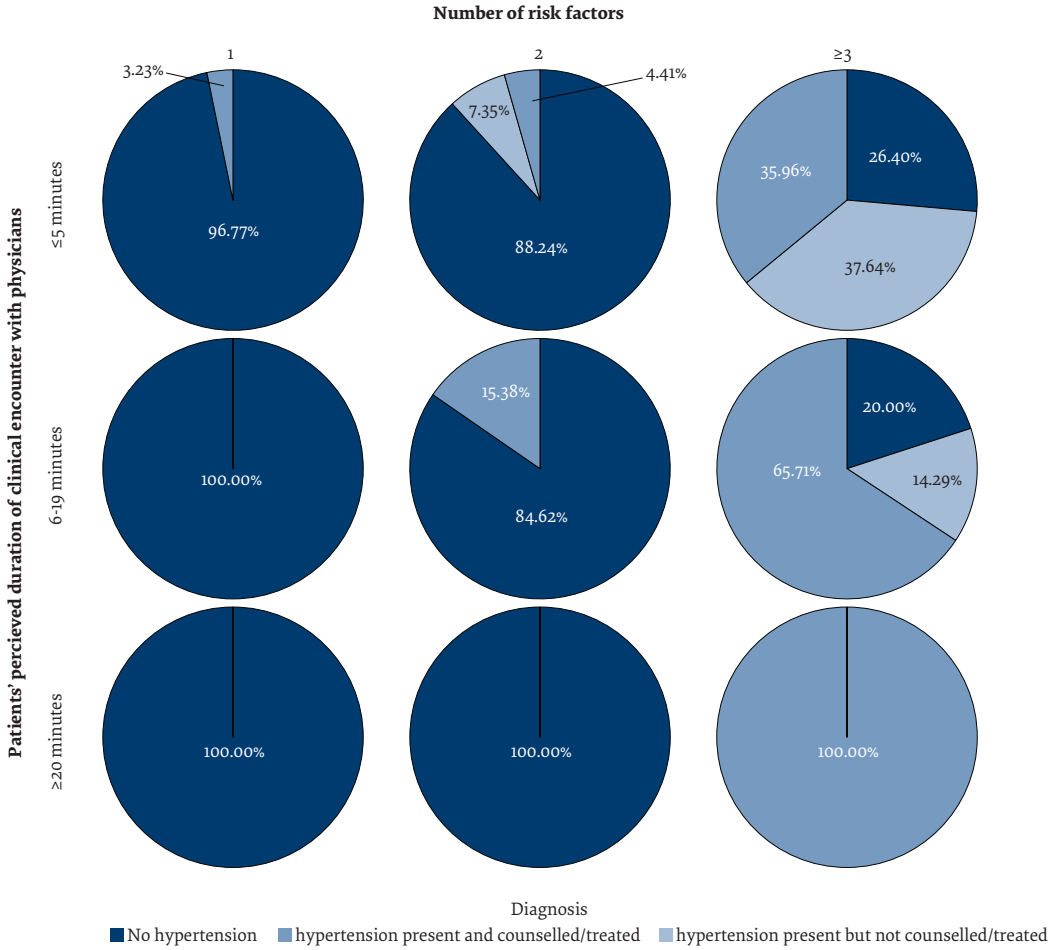
Most of the patients without a diagnosis of hypertension had uncontrolled blood pressure as reported by the patients' own assessments. It is estimated that 1 billion people worldwide have uncontrolled hypertension

Table 1 Missed opportunities to diagnose hypertension among patients presenting at Civil Hospital, Karachi, Pakistan (*n* = 359)

	No hypertension			Hypertension						
				Missed opportunity			No missed opportunity			
Characteristics	Mean (SD)	Count	95% CI	Mean (SD)	Count	95% CI	Mean (SD)	Count	95% CI	*P*
Age (yr)	38 (12)			46 (11)			45 (11)			–
Sex										
Female		157	47.6 (42.2–53.0)		76	23.0 (18.7–27.8)		97	29.4 (24.7–34.5)	0.036
Male		21	72.4 (54.6 –86.0)		3	10.3 (3.0–25.1)		5	17.2 (6.9–33.7)	
Education										
Uneducated		115	47.5 (41.3–53.8)		51	21.1 (16.3–26.5)		76	31.4 (25.0–37.4)	0.229
Primary		31	47.7 (35.9–59.7)		18	27.7 (18.0–39.4)		16	24.6 (15.4–36.0)	
Secondary		32	61.5 (48.0–73.8)		10	19.2 (10.3–31.4)		10	19.2 (10.3–31.4)	
Ethnicity										
Pushto		72	54.5 (46.0–62.9)		26	19.7 (13.6–27.1)		34	25.8 (18.9–33.7)	0.593
Sindhi		38	55.1 (43.3–66.4)		11	15.9 (8.8–25.9)		20	29.0 (19.3–40.4)	
Urdu		37	44.6 (34.2–55.3)		21	25.3 (16.9–35.4)		25	30.1 (21.1–40.5)	
Punjabi		23	41.8 (29.5–55.0)		16	29.1 (18.4–41.9)		16	29.1 (18.4–41.9)	
Balochi		8	40.0 (21.1–61.6)		5	25.0 (10.2–46.4)		7	35.0 (17.2–56.8)	
Risk factors for HTN										
0		8	100.0%		0	0%		0	0%	<0.001
1		43	97.7 (89.9–99.8)		0	0%		1	2.3 (0.2–10.1)	
2		73	88.0 (79.7–93.6)		5	6.0 (2.3–12.7)		5	6.0 (2.3–12.7)	
≥ 3		54	24.1 (18.9–30.0)		74	33.0 (27.1–39.4)		96	42.9 (36.5–49.4)	
Body mass index										
Healthy		53	67.9 (57.1–77.5)		13	16.7 (9.7–26.1)		12	15.4 (8.7–24.6)	0.003
Overweight		53	50.5 (41.0–59.9)		26	24.8 (17.3–33.6)		26	24.8 (17.3–33.6)	
Obese class I		53	46.1 (37.2–55.2)		25	21.7 (15.0–29.9)		37	32.2 (24.2–41.1)	
Obese class II or III		17	29.8 (19.2–42.5)		14	24.6 (14.8–36.8)		26	45.6 (33.2–58.5)	
Underweight		2	50.0 (12.3–87.7)		1	25.0 (2.8–71.6)		1	25.0 (2.8–71.6)	
Systolic blood pressure										
80–129.99		144	65.8 (59.3–71.8)		31	14.2 (10.0–19.2)		44	20.1 (15.2–25.8)	<0.001
130–139.99		17	29.8 (19.2–42.5)		20	35.1 (23.7–48.)		20	35.1 (23.7–48.0)	
140–185		17	20.5 (12.9–30.1)		28	33.7 (24.3–44.3)		38	45.8 (35.4–56.5)	
Diastolic blood pressure										
≤80		140	67.0 (60.4–73.1)		27	12.9 (8.9–18.0)		42	20.1 (15.1–25.9)	<0.001
81–89		3	20.0 (6.0–44.4)		7	46.7 (23.9–70.6)		5	33.3 (14.0–58.4)	
>90		35	25.9 (19.1–33.8)		45	33.3 (25.8–41.6)		55	40.7 (32.7–49.2)	
Smoking										
No		171	49.7 (44.4–55.0)		76	22.1 (18.0–26.7)		97	28.2 (23.6–33.1)	0.910
Yes		7	46.7 (23.9–70.6)		3	20.0 (6.0–44.4)		5	33.3 (14.0–58.4)	
Salt intake										
No		147	49.7 (44.0–55.3)		65	22.0 (17.5–26.9)		84	28.4 (23.5–33.7)	0.998
Yes		31	49.2 (37.1–61.4)		14	22.2 (13.3–33.6)		18	28.6 (18.6–40.5)	
Diabetes										
No		157	54.1 (48.4–59.8)		61	21.0 (16.6–26.0)		72	24.8 (20.1–30.0)	0.001
Yes		21	30.4 (20.5–41.9)		18	26.1 (16.9–37.3)		30	43.5 (32.2–55.2)	
Family history of CVD										
No		49	62.8 (51.8–72.9)		15	19.2 (11.7–29.0)		14	17.9 (10.7–27.5)	0.021
Yes		129	45.9 (40.1–51.8)		64	22.8 (18.2–27.9)		88	31.3 (26.1–36.9)	

CI = confidence interval; CVD = cardiovascular disease; HTN = hypertension; SD = standard deviation.

Figure 1 Risk factors and number of patients counselled for hypertension, Civil Hospital, Karachi, Pakistan



(*17*). Non-compliance or poor compliance to prescribed medication is a common contributor to poor blood pressure control. Factors contributing to low compliance include low socioeconomic status and lack of knowledge of the adverse effects.

Most of our study participants had obesity. Global studies have confirmed that women tend to be more obese than men (*18*). We had a predominantly overweight or obese female sample, which highlights the need to address the issue of obesity among females in national programmes. Our data indicated that more women than men were uneducated and lacked knowledge of cardiovascular risk factors. This is supported by a Canadian survey in which less than half of the women were aware of the common risk factors for cardiovascular disease (*19*).

Our study had some limitations. First, this study measured the missed opportunities based on the patients' histories documented during exit interviews. Second, for operational reasons, physicians were not approached for data collection in this study. This was partly to avoid Hawthorne bias and to record the actual clinical practices in the outpatient department. Third, most of the patients that we encountered in the outpatient department were female.

Our results suggest that much needs to be done to reduce the burden on the healthcare system in Pakistan. The physician-to-patient ratio (1:1300) is too low to provide quality care to patients (*20*). By reviewing the presenting complaints of the patients in our study, we conclude that most patients should have been screened at primary care clinics, or by local family physicians to reduce the workload at the tertiary care level. A makeshift strategy could be to establish primary care clinics within the tertiary care setting where cardiovascular risk factors can be evaluated by primary care physicians or junior doctors who can manage or later refer the patient appropriately. This filter mechanism can also be practiced through telemedicine clinics that serve as gatekeepers for minor and manageable medical issues. In a country where regular health visits to doctors are uncommon, a primary care physician workforce needs to be established to meet the healthcare needs of populations in the country. We recommend a stepwise approach to the development of a system where nonemergency patients in tertiary care settings can only be consulted upon referral from a primary care physician.

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Competing interests: None declared.

Opportunités manquées pour la prévention de l'hypertension dans un centre de soins tertiaires au Pakistan

Résumé

Contexte : Les maladies cardiovasculaires sont la principale cause de mortalité dans le monde. Elles touchent près d'1,28 milliard d'adultes, et environ 46 % d'entre eux ne sont pas conscients de leur état. Un tiers des patients ne bénéficient pas des soins appropriés pour leur maladie cardiovasculaire.

Objectif : Identifier les occasions manquées en matière de prévention des maladies cardiovasculaires et de facteurs de risque associés.

Méthodes : La présente étude a été menée auprès de 359 patients adultes âgés de 18 à 77 ans ayant quitté les services de consultations externes du Civil Hospital de Karachi (Pakistan) entre juin et septembre 2020. Nous avons enregistré les caractéristiques sociodémographiques de ces patients et la durée perçue de la consultation clinique. Ils ont également été pesés, et leur taille et leur tension artérielle ont été consignées. Nous avons cherché à savoir si leurs médecins avaient obtenu les informations nécessaires sur leurs antécédents médicaux, s'ils avaient procédé à un examen médical ou les avaient renseignés sur les facteurs de risque de maladies cardiovasculaires. Les données ont été analysées à l'aide du logiciel SPSS version 24.0.

Résultats : Presque tous les participants (98 %) présentaient au moins un facteur de risque d'hypertension. Seulement 35,9 % des personnes du groupe à haut risque affichant trois facteurs de risque ou plus ont reçu les conseils d'un médecin concernant leur hypertension, ce qui représente un taux d'opportunités manquées de 37,6 %.

Conclusion : La fréquence des opportunités manquées pour la prévention des maladies cardiovasculaires et les facteurs de risque d'hypertension étaient élevés dans la population à l'étude. Cela était dû en partie à la surcharge de travail des médecins traitants. Les services de consultations externes ont été davantage sollicités pour le traitement des affections générales que pour les soins spécialisés ou d'orientation-recours. Il est recommandé de créer des centres de soins de santé primaires au sein des structures tertiaires où les facteurs de risque de maladies cardiovasculaires peuvent être évalués et les patients transférés pour y recevoir les soins appropriés.

الفرص الضائعة للوقاية من ارتفاع ضغط الدم في أحد مراكز الرعاية التخصصية في باكستان

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الخلاصة

الخلفية: أمراض القلب والأوعية الدموية هي السبب الرئيسي للوفيات في جميع أنحاء العالم، وتؤثر على حوالي 1.28 مليار بالغ، وحوالي 46٪ من هؤلاء البالغين ليسوا على علم بمرضهم. وثلث المرضى لا يحصلون على الرعاية المناسبة لأمراض القلب والأوعية الدموية.

الأهداف: هدفت هذه الدراسة الى تحديد الفرص الضائعة للوقاية من أمراض القلب والأوعية الدموية وعوامل الخطر المرتبطة بها.

طرق البحث: أُجريت هذه الدراسة على 359 مريضًا بالغًا تتراوح أعمارهم بين 18 و77 عامًا غادروا قسم العيادات الخارجية في المستشفى المدني، كراتشي، باكستان، خلال الفترة من يونيو/ حزيران إلى سبتمبر/ أيلول 2020. وقد سجلنا معلوماتهم الاجتماعية والسكانية، والمدة المتصورة للاستشارات السريرية، ووزن الجسم وطوله، وضغط الدم. وتحققنا مما إذا كان أطباؤهم قد سجلوا سوابقهم المرضية بشكل كافٍ، أو أجروا الفحوص الطبية، أو قدموا لهم المشورة بشأن عوامل خطر الإصابة بأمراض القلب والأوعية الدموية. وحُللت البيانات باستخدام الإصدار 24.0 من برنامج SPSS.

النتائج: كان لدى جميع المشاركين تقريبًا (98٪) عامل خطر واحد على الأقل يرتبط بالإصابة بارتفاع ضغط الدم، ولم يحصل سوى 35.9٪ من الذين ينتمون إلى الفئة الشديدة التعرض للخطر، التي لديها 3 عوامل خطر أو أكثر– على المشورة من الأطباء بشأن ارتفاع ضغط الدم لديهم، وهو ما يجعل معدل الفرص الضائعة 37.6٪.

الاستنتاجات: ارتفع معدل الفرص الضائعة للوقاية من أمراض القلب والأوعية الدموية، وعوامل الخطر المرتبطة بارتفاع ضغط الدم في صفوف مجموعة الدراسة. ويرجع ذلك جزئيًا إلى زيادة عبء العمل الملقى على عاتق الأطباء المعالجين؛ واستُخدمت أقسام العيادات الخارجية لعلاج الأمراض العامة أكثر من استخدامها للرعاية المتخصصة ورعاية الإحالة. ويُوصَى بإنشاء عيادات للرعاية الأولية في مرافق الرعاية التخصصية من أجل تقييم عوامل خطر الإصابة بأمراض القلب والأوعية الدموية وإحالة المرضى لتلقي الرعاية المناسبة.

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