



IMPROVING PREVENTIVE STRATEGIES THROUGH ENHANCED DOCTOR–PATIENT COMMUNICATION ON PERSONAL CARDIOVASCULAR RISK

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ABSTRACT

Background: Cardiovascular disease remains a leading cause of morbidity and mortality globally. Although public health efforts have raised awareness about modifiable risk factors, effective personalized communication between physicians and patients is lacking.

Methods: A cross-sectional study was conducted with 62 adult participants who were divided into two groups based on the presence of at least one modifiable cardiovascular risk factor (hypertension, hyperlipidemia, diabetes mellitus, obesity, or smoking). Data were collected via a self-administered, multiple-choice questionnaire assessing demographics, awareness of risk factors, interest in personal cardiovascular risk, and the frequency and quality of physician–patient communication.

Results: Patients with risk factors comprised 75% of the sample and were significantly older (50 ± 14 vs. 39 ± 11 years, $p < 0.01$), had lower educational attainment (49% vs. 22%, $p < 0.01$), and lower income (53% vs. 40%, $p < 0.01$) compared to those without risk factors. Despite these differences, awareness of modifiable risk factors was similarly high in both groups (e.g., hypertension: 95% vs. 96%; hyperlipidemia: 95% vs. 95%; diabetes: 89% vs. 85%; obesity: 93% vs. 91%; smoking: 83% vs. 84%; all $p > 0.05$). Additionally, both groups expressed equal interest in learning about their personal cardiovascular risk (89% vs. 89%) and predominantly identified their physicians as the preferred source of information (89% vs. 91%, $p > 0.05$).

Conclusion: Despite high levels of awareness and interest in personal cardiovascular risk, the frequency and quality of communication between physicians and patients remain insufficient. Enhancing personalized risk

communication may improve adherence to preventive strategies and ultimately reduce the burden of cardiovascular disease.

Introduction

Cardiovascular disease (CVD) remains the leading cause of morbidity and mortality worldwide, accounting for an estimated 17.9 million deaths each year. A substantial body of research has identified several modifiable risk factors—including hypertension, hyperlipidemia, diabetes mellitus, obesity, and smoking—that are critical targets for prevention [1]. Despite numerous public health initiatives that have successfully raised general awareness of these factors, there remains a significant gap in clinical practice when it comes to translating this awareness into personalized risk discussions between physicians and patients.

Personalized communication about cardiovascular risk is essential because general knowledge of risk factors does not automatically translate into an accurate personal risk assessment or motivate patients to adopt healthier lifestyles. Studies have shown that patients who receive individualized risk information are more likely to engage in preventive behaviors, adhere to medication regimens, and pursue lifestyle modifications. However, the process of moving from public awareness to effective, personalized risk communication is complex and influenced by multiple factors.

One critical barrier is the quality of physician–patient communication. In many clinical settings, time constraints, varying levels of health literacy, and differences in cultural and educational backgrounds can hinder effective dialogue. Additionally, the physician’s communication style, the duration of consultations, and the availability of visual or numerical aids can significantly affect the patient’s understanding of their personal risk. Research suggests that when risk information is communicated through tailored, visual, or numerical formats rather than solely through verbal explanations, patients have a better grasp of their individual risk and are more likely to take preventive action [2].

Moreover, demographic factors such as age, education level, income, and ethnicity may further influence how patients perceive and act on risk information. For instance, older patients or those with lower levels of formal education may require more straightforward or visually supported explanations to fully comprehend the implications of their risk factors. On the other hand, patients with higher health literacy might benefit from more detailed numerical data that allows them to understand their risk on a more granular level [3,4].

Given these challenges, this study aims to explore the frequency and quality of communication regarding personal cardiovascular risk in routine clinical practice. By evaluating how often and in what manner physicians discuss individualized risk with their patients, and by identifying the demographic and awareness factors that influence these interactions, the study seeks to pinpoint areas where communication can be enhanced. Improving these interactions could lead to more effective prevention strategies, greater patient engagement in managing their health, and ultimately, a reduction in the incidence and severity of cardiovascular disease.

Methods

This study was conducted on a convenience sample of 62 adult participants recruited

from various community and primary care settings. The study was designed to evaluate the frequency and quality of communication between physicians and patients regarding personal cardiovascular risk. Eligible participants were adults aged 18 years or older who consented to take part in the study. Participants were divided into two groups based on the presence or absence of at least one of five predefined modifiable cardiovascular risk factors: hypertension, hyperlipidemia, diabetes mellitus, obesity, and smoking. Group A consisted of participants with one or more of these risk factors, while Group B comprised those without any of the identified risk factors.

Data were collected using a self-administered, structured, multiple-choice questionnaire. The questionnaire was developed after an extensive review of the relevant literature and was pre-tested on a small subset of participants to ensure clarity and reliability. It was divided into four main sections:

1. Demographic Characteristics: Participants provided information on age, gender, education level, income, and place of residence.
2. Awareness: This section assessed the participants' knowledge of modifiable cardiovascular risk factors, including specific questions on hypertension, hyperlipidemia, diabetes mellitus, obesity, and smoking.
3. Interest: Participants rated their level of concern about their personal cardiovascular risk using a Likert scale, which ranged from "not concerned" to "highly concerned."
4. Communication: This section evaluated the frequency and quality of discussions between physicians and patients regarding personal cardiovascular risk. Questions focused on how often such discussions occurred, the clarity of the information provided, and the perceived usefulness of the communication.

Statistical comparisons between groups were made, with significance set at $p < 0.01$.

Results

A total of 62 adult participants were included in the study. Among these, 75% (n = 47) had at least one modifiable cardiovascular risk factor, while the remaining 25% (n = 15) had none. Significant differences were observed in demographic and socioeconomic characteristics between the two groups, as shown in Table 1.

Table 1. Demographic and socioeconomic characteristics

Variable	Group A with risk factors (n = 47)	Group B without risk factors (n = 15)	p-value
Age (years), Mean ± SD	50 ± 14	39 ± 11	< 0.01
Lower Educational Attainment*	49%	22%	< 0.01
Income Level (Below Average)*	53%	40%	< 0.01

*Lower educational attainment is defined as having a secondary education or below.

Despite these socioeconomic differences, both groups exhibited similarly high levels of awareness regarding modifiable cardiovascular risk factors. As detailed in Table 2, awareness of hypertension, hyperlipidemia, diabetes mellitus, obesity, and smoking was nearly equivalent between the groups, with all comparisons yielding p-values greater than 0.05.

Table 2. Awareness of modifiable cardiovascular risk factors

Risk Factor	Group A with risk factors (%)	Group B without risk factors (%)	p-value
Hypertension	95	96	> 0.05
Hyperlipidemia	95	95	> 0.05
Diabetes Mellitus	89	85	> 0.05
Obesity	93	91	> 0.05
Smoking	83	84	> 0.05

In addition, both groups demonstrated a strong interest in learning about their personal cardiovascular risk and overwhelmingly identified their physicians as the most preferred source of such information. Table 3 summarizes these findings, with no statistically significant differences observed between the groups.

Table 3. Interest in personal cardiovascular risk and preferred information source

Variable	Group A with risk factors (%)	Group B without risk factors (%)	p-value
Interest in personal CVD risk	89	89	> 0.05
Selection of physician as preferred information source	89	91	> 0.05

Participants with modifiable risk factors were significantly older and more likely to have lower educational attainment and lower income compared to those without risk factors. Both groups showed comparably high awareness of modifiable cardiovascular risk factors, indicating that public health initiatives have effectively disseminated general risk information. A uniformly high level of interest in personal cardiovascular risk was noted across both groups, with the majority preferring physicians as their primary source of information.

These results highlight that, although overall awareness of cardiovascular risk factors is high, there are significant demographic differences between patients with and without modifiable risk factors. The uniformly high interest in personalized risk information underscores the need for targeted, effective physician–patient communication strategies to enhance preventive efforts.

Discussion

The findings of this study reveal a critical paradox in cardiovascular risk management. On one hand, patients across both groups demonstrated high awareness of modifiable cardiovascular risk factors—such as hypertension, hyperlipidemia, diabetes mellitus, obesity, and smoking—and expressed a strong interest in learning about their personal risk. On the other hand, the actual communication between physicians and patients regarding individualized cardiovascular risk remains insufficient.

This shortfall is particularly concerning among older individuals with risk factors, who not only face a higher absolute risk for cardiovascular events but also tend to have lower educational attainment and income. These demographic characteristics can exacerbate the challenges associated with understanding complex health information. Without effective, personalized discussions, these vulnerable patients may not fully grasp the implications of their risk factors, potentially leading to suboptimal engagement in preventive behaviors.

The fact that a large majority of patients indicated a strong preference for receiving risk-related information from their physicians underscores the pivotal role that healthcare

providers play in bridging the gap between general public health knowledge and individual risk management. Physicians are uniquely positioned to translate broad-based risk information into actionable, personalized strategies [5]. Studies have consistently demonstrated that tailored communication—including the use of visual and numerical aids—can enhance patient comprehension, improve adherence to lifestyle modifications, and optimize therapeutic interventions. For instance, visual representations of risk have been shown to make abstract concepts more tangible, thereby facilitating better understanding and decision-making among patients with varying levels of health literacy [6,7]

Moreover, the observed communication deficit may be partly attributed to systemic barriers within clinical practice, such as limited consultation time and a lack of standardized risk communication protocols. Addressing these issues is essential. Implementing structured communication tools and decision aids in the clinical setting could empower physicians to provide clearer, more effective risk assessments. By doing so, not only can patient comprehension be improved, but it could also lead to higher adherence rates to preventive recommendations—ultimately contributing to a reduction in the incidence and severity of cardiovascular disease [8].

In summary, although patient awareness and interest in cardiovascular risk are commendably high, there exists a significant disconnect when it comes to personalized risk communication. Enhancing these interactions is critical, especially for older and socioeconomically disadvantaged patients who stand to benefit the most from targeted preventive strategies.

Conclusions

Utilizing visual and numerical aids during consultations may enhance patients' understanding of their personal risk and promote better adherence to recommended preventive behaviors. Improving the quality and frequency of these interactions could lead to higher rates of lifestyle modifications and adherence to therapeutic interventions, ultimately contributing to a reduction in the incidence and severity of cardiovascular disease. Future research should focus on developing and testing standardized communication tools and training programs for physicians to ensure that personalized risk assessments become an integral part of routine clinical practice.

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