Eur J Vasc Endovasc Surg (2018) ■, 1—9

Role of Experience With Preventive Medication and Personal Risk Attitude in Non-Attendance at Triple Vascular Screening

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WHAT THIS PAPER ADDS

The present study investigated the role of two potential factors explaining non-attendance at triple vascular screening: current use of preventive medication and personal risk attitude, neither of which has previously been included in the literature.

Background: Non-attendance for vascular screening potentially restricts the overall benefit of screening at population level, but may be the result of rational judgment on the part of invitees who might not consider their risk to be relevant. The aim of this study was to investigate the role of current use of preventive medication and personal risk attitude as potential factors explaining non-attendance at triple vascular screening.

Methods: This was a case control study across 25,078 men offered screening and intervention for abdominal aortic aneurysm, peripheral artery disease, and hypertension in the Viborg Vascular (VIVA) screening trial. Data on socio-demographic and socio-economic characteristics, diagnoses, and use of preventive medication were extracted from national registries. A proxy for personal risk attitude was constructed. Logistic regression was used to estimate odds ratios with 95% confidence intervals.

Results: Use of statins (0.78; 95% CI 0.71—0.85), antihypertensives (1.26, 95% CI 1.13—1.41), or antithrombotics (1.13, 95% CI 1.04—1.23) were all associated with non-attendance. With regards to personal risk attitude, a statistically significant association was found between users of preventive medication with no recent diagnosis of cardiovascular disease and non-attendance (0.82, 95% CI 0.72—0.94). The role of traditional factors explaining non-attendance at vascular screening, such as low socio-economic status and comorbidity, was confirmed.

Conclusion: Non-attendance at triple vascular screening is influenced by use of preventive medications and traditional explanatory factors of non-attendance at vascular screening, including existing CVD comorbidity. Attendance rates might benefit from rethinking risk communication alongside screening invitations according to varying invitee profiles and clinical risk scenarios, and from providing interventions targeted at individuals with lower levels of health literacy.

Article history: Received 25 October 2017, Accepted 22 April 2018, Available online XXX

Keywords: Mass screening, Secondary prevention, Vascular disease, Aortic aneurysm, Hypertension, Peripheral arterial disease

BACKGROUND

Vascular screening as a form of secondary prevention to prevent ruptures of abdominal aortic aneurysm (AAA) has been introduced in several countries. However, varying non-attendance rates of 45—80% signal that a substantial number of individuals at risk of vascular disease may miss out on the benefits of screening.[1—3] Non-attendance at AAA screening has been associated with demographic factors such as old age, being unmarried, social deprivation, immigrant status, comorbidity, higher healthcare use, long travel distance to screening location, and smoking, among others.[1—4] In a recent Swedish study, non-attendees and attendees at screening had similar rates of ischaemic heart disease, albeit not investigated in a multivariable model.[1]

Secondary prevention vascular screening programs are often offered irrespective of medical history.[1] However, the role of individuals' experience with current use of preventive medication, with or without past diagnoses of cardiovascular disease (CVD), seems to have been ignored in explaining non-attendance patterns; although initiation of

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1078-5884/

https://doi.org/10.1016/j.ejvs.2018.04.016

preventive medication is part of the vascular screening offer, CVD risk presents on a continuum, and preventive CVD medication use reaches 30% of the general population.[6] In the recent Viborg Vascular (VIVA) screening trial targeted at triple vascular conditions, almost two thirds of those diagnosed with peripheral vascular disease (PAD) already used statins or anti-platelet therapy at the time of screening,[7] indicating a limited potential for additional preventive actions. On the other hand, CVD is a strong predictor of vascular conditions such as AAA,[5] which highlights the complexity behind decisions about which individuals to invite to vascular screening, and how. This complexity underlines the importance of obtaining insight into how past experiences and choices with regards to medical, history drive the decision on whether or not to attend.

The decision of whether or not to attend screening has been suggested to be founded in rational thinking and is therefore dependent on the perception of personal risk and the general personal risk attitude, that is the orientation towards taking or avoiding a risk when making decisions in situations with uncertain outcomes.[4] Personal risk attitude is highly individual and can be influenced by, for example, the perceived severity of a situation, fear, sense of control, and personal experiences.[8] A key instrument informing the decision to attend screening is the invitation letter, which should appropriately inform and enable invitees to judge their personal benefit of attendance. That is, however, a complicated matter affected by different aspects such as objective clinical risk, subjective personal risk, and personal risk attitude. The relationships between personal risk perception, personal risk attitude, and non-attendance at screening are essentially uninformed in relation to vascular screening, although studies of cancer screening suggest a modest positive relationship between the perception of personal risk and screening attendance.[9] The objective of this study was to assess the roles of current use of preventive medication and personal risk attitude on non-attendance at triple vascular screening on top of the traditional explanations for non-attendance at AAA screening.

Two hypotheses (H) were formulated based on more general findings, that existing users of preventive services are more prone to engage in additional preventive services, indicating an underlying positive attitude towards taking responsibility for one's own health.[10]

H1: It was hypothesised that screening attendance is associated with current use of preventive medication because it reflects a positive attitude towards preventive services and a recognised personal risk.

H2: It was hypothesised that attendance is associated with personal risk attitude categorised according to how the individual has reacted to the recent diagnosis of CVD in terms of initiating and adhering to preventive medication:

a) Use of medication + no recent CVD diagnosis: signals risk aversion and is associated with attendance;
b) Use of medication + recent CVD diagnosis: signals adherence and is associated with attendance;
c) No use of medication + recent CVD diagnosis: signals neglect and is associated with non-attendance.

METHODS

Study design

This case control study is based on data from the VIVA trial,[6] which randomly allocated men (50,156) to either screening for AAA, PAD, and hypertension, or to no screening. Trial participants allocated to the screening arm of the trial were categorised as either attendees or non-attendees. Trial data were linked to historical data from nationwide registries. Study participants committed to the program with a written consent using pre-printed consent forms. The trial was approved by the Central Denmark Region's Ethical Committee (M20080028) and the data protection agency (1—16—02—1-08).

Setting

Trial participants were included in the trial between October 8, 2008 and January 11, 2011. Tests comprised ultrasound scans of the abdominal aorta, ankle brachial index measurements, and conventional blood pressure management. The screening program was provided in 19 municipalities using 15 screening sites across the Central Denmark Region: three mobile teams with two specially trained nurses each covered one third of the region. A one page invitation to participate in the study was forwarded by post 1—2 months before a pre-booked time. Instructions were given regarding how to change the pre-booked time via a central screening secretary with conventional office hours or cancel in case of non-attendance. The invitation included information on the importance of early detection of AAA and PAD, possible consequences in case of positive findings, and practical issues such as duration of screening. One re-invitation was made to those who did not attend their first appointment.[6]

Participants

The population in the current study comprised trial participants allocated to the screening arm of the VIVA trial ($n = 25{,}078$). The VIVA trial included all men aged 65—74 living in the Central Denmark Region, with no exclusion criteria.

Variables

Explanatory factors. Socio-demographic characteristics collected included dichotomous variables (yes/no) for age > 70 years, immigrant status, and living in a single person household. A categorical variable of geographic area of residence based on the municipality code was aggregated into three areas matching the regional hospital unit uptake areas (Eastern, Mid, or Western part of Central Denmark Region). Socio-economic characteristics included education

Please cite this article in press as: Hansen TB, et al., Role of Experience With Preventive Medication and Personal Risk Attitude in Non-Attendance at Triple Vascular Screening, European Journal of Vascular and Endovascular Surgery (2018), https://doi.org/10.1016/j.ejvs.2018.04.016