

Hypertonscreening – tidig upptäck av högt blodtryck via tandvården

Akademisk avhandling

Som för avläggande av doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet, kommer att offentligen försvaras i Arvid Carlssons sal på medicinarberget, Medicinargatan 3, Göteborg den 19 maj klockan 13:00

av Helen Andersson

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Avhandlingen baseras på följande delarbeten

- I. Andersson H, Hedström L, Bergman S, Bergh H. The outcome of two-step blood pressure screening in dental healthcare. *Scand J Public Health* 2018;46(6):623-29.
- II. Andersson H, Hedström L, Bergh H. White-coat hypertension detected during opportunistic blood pressure screening in a dental healthcare setting. *Scand J Prim Health Care*. 2021;39(3):348-54.
- III. Andersson H, Svensson M, Bergh H. The cost-effectiveness of a two-step blood pressure screening programme in a dental health-care setting. *PLoS One*. 2021;16(5):e0252037.
- IV. Andersson H, Bergh H, Bergman S, Bergsten U. Individuals' experiences of being screened for hypertension in dental health care – “No big deal”. *Patient Preference and Adherence*. Manuscript submitted March 2022.

**SAHLGRENKA AKADEMIN
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Hypertension screening – early detection of high blood pressure in dental healthcare

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Abstract

Background: Hypertension is the main risk factor for the world's total disease burden. This is of significance for public health at national level, for healthcare professionals, resource consumption and costs as well as for the individual. In its impact on secondary diseases, hypertension may cause great suffering for the individual and high costs to society. Despite today's well-developed healthcare system, many people have undiagnosed high blood pressure. A large proportion of the healthy population regularly attends dental clinics. As a means of facilitating broad preventive public health work, dental clinics could carry out continuous medical screening in collaboration with primary healthcare in order to identify risk groups at an early stage, thereby reducing both oral and general ill health in the population.

Aim: The overall aim was to study hypertension screening in dentistry in terms of feasibility, effects, health-economic consequences as well as individuals' experiences.

Methods: A combination of methods was employed for data collection and analysis. Study I is an epidemiological observational study where 2,025 participants aged 40-75 years were consecutively screened for high blood pressure at their annual dental visit. Data concerning risk factors were collected by means of a health questionnaire. Study II is a multicentre observational study of the same 2,025 participants. Those with a systolic mean blood pressure value of ≥ 140 mmHg and/or a diastolic mean blood pressure of ≥ 90 mmHg were asked to use a home blood pressure device. Study III is a cost-effectiveness analysis. Data on the short-term cost were based on the screening program, while data on the long-term cost were based on the short-term outcomes combined with modelling in a Markov cohort model. Deterministic and probabilistic sensitivity analyses were carried out to assess uncertainty. Study IV had a qualitative design with an inductive approach. Twenty participants were interviewed using open-ended questions. The material was analysed in accordance with qualitative content analysis. A cross-sectional analysis of non-responders was conducted on the 2,219 individuals who were invited to participate in the hypertension screening study.

Results: Study I found 170 participants with previously unknown hypertension (NNS = 12). The method yielded a positive predictive value (PPV) of 0.73 and eliminated 84.8% of the false-positive participants. The results also demonstrate that based on ESH/ESC risk estimation, 76.5% of those participants newly diagnosed with hypertension had a moderate or high risk of cardiovascular mortality within 10 years. Study II shows that 17.7% of a healthy population exhibited white-coat hypertension (WCHT) and that 57.2% of those with elevated blood pressure in the dental clinic had normal blood pressure at home. In Study III, the results of the long-term model revealed that the screening model is unlikely to be cost-effective in a country with a well-developed healthcare system and a relatively low prevalence of hypertension. The results in Study IV describe individuals' experiences of blood pressure screening in dental health care by means of one theme: "No big deal", based on two categories: Convenient way to measure blood pressure and Increased awareness of health.

Conclusion: Opportunistic blood pressure screening with a two-step method in a dental setting was feasible and yielded a high positive predictive value. Although the screening model is unlikely to be cost-effective in a country with a well-developed healthcare system and a relatively low prevalence of undetected hypertension, the patients nevertheless reported a mainly positive experience, which argues well for the introduction of more screening. Blood pressure screening did not create any major concerns, was convenient and contributed to an increased awareness of health.

Keywords: Hypertension, blood pressure, screening, dental healthcare, white-coat hypertension, cost-effectiveness, individuals' experiences