

# Primary and Secondary Prevention of Cardiovascular Diseases Embedded in the Visiting Nurse Services: Description of the Intervention Model

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## ABSTRACT

*The paper describes a visiting nurse led intervention model for the primary and secondary prevention of cardiovascular diseases (CVD) and specificities of its application. Although CVD burden is high in Croatia, the visiting nurse services have not been specifically focused on CVD prevention in the population until now. The intervention model described here is being implemented alongside the second cycle of the Croatian Adult Health Survey (2008 CAHS). The model includes an objective evaluation of respondents' CVD risk factors through quantitative and qualitative analyses, as well as respondents' self-evaluation of risk factors and motivation to change. At the same time, respondents are educated and intervention is evaluated. A 'health booklet' was specifically designed for documentation during one year's follow-up, where both the user and the visiting nurse keep copies of the negotiated targets and strategies set to achieve them. This intervention model has the potential to mobilize the service towards permanent incorporation of primary and secondary CVD prevention into routine care and, due to work specificities of the visiting nurse services, to cover the entire population in an organized CVD prevention.*

**Key words:** cardiovascular diseases, community health nursing, Croatian Adult Health Survey, prevention, Croatia

## Introduction

In 2003, the first cycle of the Croatian Adult Health Survey (CAHS) aimed to assess risk factors for developing cardiovascular diseases (CVD). The survey was conducted by visiting nurses on a nationally representative sample of 9,070 citizens. The recorded data included measurements, behavioural and consequential risks, health condition, socioeconomic data, health care use, medication and preventive examinations. Analyses of the data from the 2003 CAHS have shown a great burden of cardiovascular risks with visibly poorly developed both primary and secondary prevention. These results led to the urgent development and implementation of an intervention model for primary and secondary CVD prevention. The *Regionalism of Cardiovascular and Behavioural Risks – Intervention Model* project was launched in 2008 and included a visiting nurse led model of CVD prevention, alongside the second cycle of the CAHS.

Compared with the 2003 survey, the 2008 CAHS was designed to include additional questions on nutrition in line with the latest recommendations on healthy nutrition, as well as an instrument measuring general stress, which was not included in the 2003 survey<sup>1</sup>. The intervention part of the project introduced a novelty in a specifically designed 'health book', which was applied by the visiting nurses as the key part of the CVD prevention programme. The health book documented risk evaluation based on interviews and objective measurements, assessment of the required preventive interventions, planned intervention targets agreed between the participant and the visiting nurse, and findings from control visits. This way a partnership is achieved between service providers and users, as well as continuity of care and, subsequently, users' active role in achieving positive intervention outcomes.

## Visiting Nurse Care in the Community

Recent global trends have demonstrated a reorientation of health services towards primary health care, based on the population needs. Primary health care needs to entrust the work to teams which include all nursing disciplines in the community and other groups, as well as doctor teams<sup>2</sup>. The global objectives of primary health care are oriented towards an integrative approach which, in addition to treatment and rehabilitation, also includes procedures for advancing health, disease prevention and continual health care of the individual inside his or her family, work place and social environment. This is the reason why visiting nurse services represent the leading force in implementing the activities oriented to advancing the health of the population.

The World Health Organization (WHO) in 1974 defined nursing in the community as an activity caring for both the individual and the family. Nursing also recognizes and satisfies the needs of a wider population through a developmental approach which encourages community members to participate in developmental health and general welfare projects. Moreover, in a discussion article about nursing, on the topic of *Health for All* objectives, in 1986 the WHO saw nurses in the community as central persons for achieving health for all. Nurses serve as users' advisors and can be integrated at all levels of health care because they continually work in the community and users' homes. The mission of nursing in the society is to help individuals, families and groups within the community they live and work in, as well as to establish and realize their physical, social and mental potentials<sup>3</sup>. Nurses are required to develop and carry out tasks which promote and maintain health, and prevent disease. In their work, nurses ensure active participation of the individual, family, immediate and wider community in all aspects of health care, promoting therein self-determination and counting on one's own strengths. Consequently, nurses in the community are environmentally and holistically oriented, as well as oriented towards a culturally acceptable practice. The underlying objective is to meet the needs of individual health care users, families, various groups and the general population.

## Visiting Nurse Care in Croatia

Visiting nurse care in Croatia is an integral part of primary health care. The primary health care model strongly influences the development of the nursing practice in the community. As part of this model the visiting nurse proactively contacts the user population at the individual level, family level and community level so as to recognize the needs in a partnership with the user, as well as jointly develop an intervention strategy. The main characteristics of this activity are community orientation, with the individual/family in the focus of attention<sup>4</sup>.

The activities include health promotion, prevention, as well as participation in treatment. Services offered are available to all citizens free of charge. This is the very

reason why this concept is closely related with the WHO aspects presented in the Alma Ata Declaration: primary health care shall be just, affordable, efficiently managed and integrated, thus including secondary and tertiary care, and other interests, as well as an active participation of the community in planning and providing services.

The Croatian health system employs 836 visiting nurses distributed in their respective county health centres. According to the standards of the Croatian Institute for Health Insurance, visiting nurses provide care in a defined area of an average 5 100 inhabitants. The work specificity of visiting nurses lies in the care of a defined geographical area and the community which includes all population age groups. Through a multifunctional form of public care, the service should include operating on the principle of preventive care. One of the important daily tasks of nurses in visiting nurse care should include identifying high risk behaviours, reducing such behaviours and improving health literacy.

Since the visiting nurse care focuses on individuals, but also on all members of the family, health education delivered by this service can have a particularly powerful effect in changing high risk behaviours. Therefore, visiting nurses are meant to be included in conducting public health interventions, in maintaining and promoting health, reducing chronic non-communicable disease morbidity and mortality, as well as prolonging life expectancy of the individual in the community. However, the realization of these goals has been less than optimal.

Although CVD is the leading cause of death in Croatia, the visiting nurse service has not been specifically focused on CVD prevention in the population, until now. The intervention model launched alongside the 2008 CAHS has the potential to mobilize the service towards permanent incorporation of CVD primary and secondary prevention into routine care.

Public health strategies aiming at risk factor modification combine primary and secondary CVD prevention. Primary prevention primarily includes prevention of the symptomatic disease by affecting behavioural and physiological risk factors. Behaviour, or exposure to the most important risk factors, is conditioned by physical health, social environment and wider determinants such as income, employment, education, physical environment, housing conditions, etc. Secondary prevention encompasses the prevention of the recurrent disease or death after the onset of symptomatic cardiovascular disease.

## *The 2003 and 2008 CAHS surveys*

The 2003 CAHS survey covered a nationally representative sample of respondents in all of the 21 counties in Croatia<sup>1</sup>. Visiting nurses were specifically trained to conduct the survey through initial workshops, and this was reinforced in subsequent workshops. Progress during implementation was monitored by the managing team.

The 2008 CAHS is being conducted on the same sample as the 2003 survey and includes a re-examination of

the 9,070 initial respondents. The survey is being carried out by visiting nurses at their respective centres and care areas in 20 counties, including the City of Zagreb. The structure of the 2008 CAHS survey is given in Table 1. Upon completion of the survey, the visiting nurse records the time of completion and assesses the cooperation of respondent during the interview.

### Intervention Model

The primary objective of the *Regionalism of Cardiovascular and Behavioural Risks – Intervention Model* project is to develop a system of primary and secondary CVD prevention through visiting nurse services at the population level. The project, which is being carried out on a cohort of 9 070 respondents to the 2003 CAHS, re-examines and re-evaluates risk factors among these participants and, as a part of the intervention, sets individual targets and plans, according to the model based on the case-based-reasoning principle at the local level.

**TABLE 1**  
BLOCK STRUCTURE OF THE 2008 CAHS SURVEY

Identification – name and surname, address, ID from the 2003 survey, date and time of interview, number of household members, accepting/refusing to take part in the survey including justification, year of death if the respondent passed away, place and cause of death
Measurements – anthropometry data (height, weight, waist and hip circumference), blood pressure and pulse (left and right arm); in some counties – blood glucose and lipids; self-evaluation of appearance (silhouettes)
Stress – filling out a questionnaire that measures general stress; self-evaluation of stress on the day of measurement in comparison with the time of 2003 CAHS
Health survey – self evaluation of health status; detailed evaluation of activities in the previous four weeks and possible limitations to exercising physical activities
Using health services – frequency of usage, problems relating to usage; respondent’s interpretation of the reasons for and problems with hospital stay, if any, between 2003 and 2008; self-report of performed preventive examinations (breasts, uterus, prostate, blood pressure, blood sugar, thyroid gland, large intestine, check-ups)
Dietary habits – frequency of meals, type of fats, consuming coffee, tea, milk and dairy products, sugars, fruit juice and fruit, vegetables, fish, meat, consuming fast food, water, alcoholic and non-alcoholic beverages
Smoking – self-report of smoking/non-smoking; quantification of smoking at home and at the work place; smoking presently or in the previous five-year period; motivation for quitting
Physical activity – frequency and form of exercise and other modes of physical activity
Household – establishing the number of family members according to age and self-evaluation of the financial situation of the household
Respondent characteristics – including marital status, vocation, employment, work position and education background
Quality of life – including self-evaluation of satisfaction with life and the Internet use skills

After completing the 2008 survey for a particular cohort respondent, the nurse opens a health book (Table 2), with the aim of conducting primary and secondary CVD prevention. The book monitors the respondent over a one-year study follow-up period, and beyond. At the end of 2009, copies of the books are going to be returned to the research team for processing and evaluation of the intervention instruments. With respondents at risk, the nurse arranges intervention and monitors them, upon need, over a one-year period, after which the book is concluded and submitted for processing and analysis. Respondents who had no risks identified over a period of one year are re-evaluated for possible risks.

The health booklet represents an independent diagnostic procedure of the visiting nurse and an intervention model in the CVD prevention. The aim of the intervention model is to identify cardiovascular risks for the respondent, to arrange individual targets and set up strategies to achieve them – an intervention for the purpose of achieving cardiovascular health.

With respondents at risk, the visiting nurse will arrange the intervention. The role of the visiting nurse is to proactively contact the respondent, recognize his or her needs in a partnership and develop an intervention strategy. This way personal choice and responsibility are encouraged, as well as greater motivation and chances for success. During communication and measurements, evaluation is made. Collecting holistic data and connecting information makes up the essential purpose of every nursing evaluation. A nurse should make it possible for the user to obtain the needed intervention and realize his or her goals. The basic intervention in carrying out the intervention model is education and support. It should be person-oriented, which includes physical, intellectual, psychological, social and economic components, and should acknowledge motivation. The intervention model must be flexible.

**TABLE 2**  
BLOCK STRUCTURE OF THE HEALTH BOOKLET

Evaluation of respondent’s risk behaviours
Cardiovascular risks obtained by measurements
Health and social status
Evaluation of behaviours since 2003
Self-evaluation
Self-evaluation – recommendations – motivation – target
Follow-up visits
Respondent are visited quarterly, or as deemed needed by the visiting nurse, and informed on how to conduct the agreed intervention.
Risk evaluation after one year
The visiting nurse re-evaluates cardiovascular risks in the way it was done one year earlier.
Epicrisis
The visiting nurse describes in free text his or her findings on the year-long intervention and achieved success, and gives a general grade of the intervention success (1–3).

A user-nurse relationship, which was created during previous work in the community, helps the visiting nurse to evaluate and diagnose personal health needs. Developing trust and integrity affects the providing and receiving of information and the probability that the user will adhere to the nurse's advice. In the intervention model, the nurse evaluates the user's ability to get personally involved in achieving the targets that have been set by the user, in consultation with the visiting nurse. It must be stressed that the professional role of a visiting nurse requires a level of deliberation on the most acceptable mode of education and possible interventions which include changes in life style.

Working with the user, the visiting nurse is not only problem-oriented. Through a holistic approach, he or she bears in mind the real and potential needs, as well as implementation problems. When setting targets and planning the implementation of the intervention, all information should be made logical for the user, and the user and family helped to articulate their needs and recognize needs professionally evaluated by the visiting nurse. When setting targets and the ways to achieve them, the nurse must balance the needs, resources and requests. The intervention model focuses on communication skills. In addition to obtaining the necessary data, it is important to check the existing understanding of and views on the problem. The next step is supporting and enhancing user's motivation, as well as providing and repeating the information and advice early on in the conversation. It is important to check what share of the given information was understood by the user and register in the health booklet all that was done in a particular session.

Upon evaluation of needs and setting goals, in agreement with the user, the nurse also needs to evaluate his or her own role in terms of complete, partial, supportive, advisory or leading, depending on the complexity of the intervention, as well as the structure of the environment and person. The evaluation phase requires the user and the nurse to assess the course of the intervention, including the efficiency of relationships, given advice and evaluation resources used. The evaluation of set goals is made during follow-up visits and together with the user. During evaluation there is a possibility of revising goals and interventions. Evaluation is, therefore, a dynamic process subject to changes interdependent with changes in life, attitudes and, possibly, earlier misdefined goals and strategies to achieve them. The final evaluation is done one year later, when the visiting nurse repeats the evaluation of cardiovascular risks, after which he or she makes final conclusions in the health booklet.

Through a joint evaluation by the user and the nurse, an answer can be given to the question on how to evaluate the influence of the environment on the efficiency of the intervention. It is equally important to get an answer to whether a direct result of improving user's condition is intervention by a health professional or another variable aiding intervention. All these data may help plan further interventions in the final evaluation.

An evaluation of cardiovascular risks includes measuring height, weight, body mass index, waist and hip circumferences, systolic pressure, diastolic pressure, capillary blood glucose, and cholesterol and triglyceride levels. The table is filled in with measured values. Commentaries are written in the form of notes on possible difficulties during measurements (e.g. waist circumference is not measured due to pregnancy; blood sugar was measured one hour after the meal; height can not be measured due to kyphosis, etc.)

Social health status is entered as free text and includes a description of possible cardiovascular, cerebrovascular or other diseases which may affect disorders of cardiovascular status, possible hospitalizations due to CVD and possible diagnoses according to primary health care documentation. It is important to register whether the patient adheres to the prescribed therapy for CVD. These data are written down by the visiting nurse, according to user statements and available medical documentation. The visiting nurse also records his or her assessment of potential social difficulties or threats that might hamper treatment success (e.g. poverty, loneliness, neglect, violence, etc.).

The respondent is reminded that he or she was previously interviewed in 2003 within the scope of the first cycle of CAHS. Questions refer to risk factors for alcoholism, smoking, physical inactivity and nutrition. Based on the interview, the nurse grades changes in the respondent's habits (1-significant, 2-partial, 3-no change, 4-no reasons for change, 5-worsening).

Based on the measured values and the interview, the visiting nurse evaluates the style of risk behaviour and proposes the intervention (e.g. main/largest meal taken in the evening, excessive smoking, etc.). Based on the conversation, the respondent's self-evaluations are registered for every identified cardiovascular risk. The user evaluates his or her style of risk behaviour, which needs not to be in line with the evaluation made by the visiting nurse. The nurse fills out the following column with his or her recommendations to the respondent in regard to the aim of risk reduction (e.g. main meal should not be dinner, reduce watching TV, etc.). Motivation is graded on a 1–5 scale, as indicated by the respondent.

The last phase is registering the agreed quantitative goals or targets (e.g. reduce weight by 5 kg or increase walks to 30 minutes three times per week, etc.). The goals and strategies to achieve them are jointly agreed on by the nurse and the user. The nurse gives a copy of the page containing the objective and recommendations to the user.

The visiting nurse is recommended to occasionally visit his or her respondents, according to his or her own judgment, preferably quarterly. The purpose of such visits is an evaluation of the course of the intervention, reinforcement in case of reduced motivation and support in moments of diverse aggravating factors in intervention implementation. At each visit, the nurse documents his or her findings in the health booklet.

The epicrisis is an evaluation of the intervention including elements of the entire course, supportive and aggravating circumstances and a comment on the intervention's success or failure. A descriptive form with quantitative indicators also includes a subjective evaluation and findings by the visiting nurse needed for closure. A subjective evaluation is a reflection on the year-long monitoring of a user and necessary information for completing the intervention model.

The particular value of the described model lies in the partnership between the visiting nurse and the respondent. The model, which simultaneously includes measurements, assessments, goal setting, strategies for change and evaluation, focuses on the process of providing preventive health care, which has thus far been sub-optimal in real life circumstances. The intervention model represents a dynamic form of inter-reaction of the visiting nurse and the user in identifying risk factors, agreeing on setting goals and joint evaluation.

## Discussion

Low intensity nurse led lifestyle interventions have previously been shown to be effective in reducing CVD risks<sup>5</sup>. Our intervention model of primary and secondary CVD prevention includes an interactive and developmental role of the user and the nurse. The interactive role addresses the psychosocial process between the user and the nurse, which is manifested in the giving and receiving of information. The developmental role implies a gradual process which takes place during intervention and evaluation.

The purpose of the above model carried out by visiting nurses is working with the user, not for the user. The individual is at the very heart of health care. The purpose of such work is user-oriented so as to encourage users to take the responsibility for their own health and welfare, through a process of self-decision making. The role of a visiting nurse includes, among other things, enabling the individual, family and community to take over personal responsibility for one's own health. One should be guided by the fact that people have different needs in their daily activities and habits, as well as other types of support. Sometimes users are independent of the visiting nurse, while in other situations they may be interdependent or fully dependent.

Evaluation should be holistic and should include the setting up of a nursing intervention oriented towards a person as a whole, which, ideally, may help the user avoid a crisis or provide support during one, which takes place due to a change in the life style. The course of the intervention model has shown that intervention sometimes fails due to user already having preconceived plans and expectations. The clarity of the purpose for carrying out changes in behaviours also influences the success of the intervention. The visiting nurse must have clear objectives and structures in scope of which interventions are conducted. However, the structure has to be flexible enough to enable users to clarify personal views. Inter-

ventions tend to be more efficient when the nurse had previously realized a positive relationship with the user, as it influences user's perception. Including users is pivotally important for confirming health needs, which was also recognized in developing the programme. The Ottawa convention accentuates the need for partnership among professionals and users at all levels, problem solving and care with a focus on cultural elements. This way individuals and the community are enabled to maximize their abilities independently of their health status, through adapting their life style and behaviours.

Carrying out the intervention model requires initial knowledge and skills by a visiting nurse, but these are likely to strengthen during the intervention process. Intervention implementation may be more difficult if the user refuses to cooperate, if he or she is unavailable due to the organization of working hours, or if the surroundings in which he or she lives have a negative effect. This is why occasional workshops are held during implementation where leaders of research projects and implementers – visiting nurses, through a joint discussion, exchange views, identify problems and agree on solutions, attempting to find the model that could ensure as efficient project implementation as possible. Furthermore, at the beginning of project implementation, initial preparatory educational workshops were organized as a follow-up of the formal education acquired by the visiting nurses during schooling.

The decision about the way of life is a personal choice of each individual. Every person forms their life style under the influence of different intrinsic and extrinsic factors. The choice is often burdened with the lack of knowledge, motivation or resources, working and living conditions, surroundings and many other factors. This is why all aggravating factors, as well as the chances for the realization of the set goals and proposed recommendations, should be identified, along with providing the necessary knowledge and support. Finally, the purpose of the intervention model is to adapt objectives and interventions to the abilities and motivation of the user, acknowledging, up to a point, the recommended standards in CVD prevention.

## Conclusion

CVD is often caused by modifiable or partially modifiable risk factors. Modifiable risk factors, such as alcoholism, smoking, physical inactivity and inadequate nutrition, can be fully eliminated by changing life style. The partially modifiable risk factors in CVD, most notably high blood pressure, blood fats and blood glucose, can be reduced in controlled conditions. The key role in evaluation of risk factors in the population, as well as intervening, is that of primary health care. Visiting nurse services are an inseparable part of primary health care which incorporates a practice focusing on the user, based on health in three domains: individual, family and the community. The focus is placed on health promotion, disease prevention and a multidisciplinary approach to planning

and providing health care services. At this level the visiting nurse can adopt a health approach in the community focusing on individuals, or a public health approach which covers the entire population or risk groups within the entire population. The visiting nurse services with their scope of work have the potential to be a catalyst for primary health care to achieve the health potential of the community.

The intervention model implemented as a part of the *Regionalism of Cardiovascular and Behavioural Risks – Intervention Model* project stresses a holistic approach to the individual, with individual-oriented goals and strategies to achieve them. Through this individual-oriented model, a visiting nurse can evaluate the population of the territory he or she is in charge of, identify predominant risk factors and causes of impaired health, as well as likely prevention opportunities.

The specificity of this intervention model lies in the creation of a novel strategy in primary health care, namely prevention of disease and unhealthy behaviours delivered by visiting nurses. We expect reductions in the prevalence of CVD risk factors and, by extension, long-term reduction of CVD morbidity and mortality. Results of a recent cluster randomized trial show promise for

nurse-led family based CVD prevention programmes, such as is ours<sup>6</sup>.

The health booklet as an intervention instrument should become mandatory in the documentation of visiting nurses, in carrying out the activities of improving cardiovascular health. Moreover, efficient implementation requires networking of the entire health system, as well as the indispensable co-operation between general practitioners and visiting nurses. The lack of harmonization in implementation of preventive health services so far, the impossibility of data exchange and the non-existence of a clear national preventive strategy at the primary health care level have resulted in suboptimal practice and high CVD burden, as was shown by the 2003 CAHS results. We hope our intervention programme will contribute to setting up and carrying out co-ordinated health care activities of CVD prevention in the population, which are urgently needed.

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### PRIMARNA I SEKUNDARNA PREVENCIJA KARDIOVASKULARNIH BOLESTI UKLOPLJENA U PATRONAŽNU DJELATNOST: OPIS MODELA INTERVENCIJE

### SAŽETAK

Rad opisuje model intervencije patronažne službe za primarnu i sekundarnu prevenciju kardiovaskularnih bolesti, te specifičnosti njegove primjene. Model intervencije primjenjuje se usporedno s drugim valom Hrvatske Zdravstvene Ankete (HZA 2008) i uključuje objektivnu procjenu kardiovaskularnih rizika ispitanika kroz kvantitativne i kvalitativne analize, kao i samo-procjenju rizika i motivacija za promjene od strane ispitanika. Ispitanici se educiraju i intervencija evaluira. Za dokumentaciju tijekom jednogodišnjeg razdoblja posebno je osmišljena 'knjižica zdravlja', gdje korisnik i patronažna sestra trajno posjeduju podatke o dogovorenim ciljevima i načinima za njihovo postizanje. Iako je breme kardiovaskularnih bolesti u Hrvatskoj veliko, patronažna djelatnost do sada nije posvećivala posebnu pozornost prevenciji u populaciji. Ovaj model intervencije ima za cilj mobilizirati patronažnu djelatnost prema trajnom uključivanju primarne i sekundarne prevencije kardiovaskularnih bolesti u svakodnevnu praksu. S obzirom na specifičnosti položaja patronažne sestre u sustavu zdravstvene zaštite, program bi mogao pokriti cjelokupno stanovništvo organiziranom preventivnom aktivnosti.