Bachelor´s thesis

Degree program in Nursing

Nursing

2016

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KEY FACTORS TO SUCCESSFUL ADHERENCE TO DIETARY MODIFICATIONS FOR PATIENTS WITH CORONARY HEART DISEASE

– a literature review

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BACHELOR'S THESIS | ABSTRACT
TURKU UNIVERSITY OF APPLIED SCIENCES

Degree program in nursing | Nursing

2016 | 25 + 12

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KEY FACTORS TO SUCCESSFUL ADHERENCE TO DIETARY MODIFICATIONS FOR PATIENTS WITH CORONARY HEART DISEASE – a literature review

The purpose of this thesis was to find out what are the key factors that make a patient with coronary heart disease adhere to the nutritional modifications in cardiac rehabilitation using research articles produced in the years 2006-2016.

This thesis was produced as a literature review. The process was as systematic as possible following the literature review guidelines from textbooks. Studies were searched using search terms "coronary heart disease" and "dietary adherence" using nursing internet databases; Cinahl Complete, PubMed, Medline (Ovid), EBSCOhost and Emerald Insight. After the search process and analysis the literature review was produced using 16 studies and research articles.

The results of this literature review could be divided into two major categories. Patients with coronary heart disease adhere to dietary modifications best when they receive information; patient education about the disease, symptoms and lifestyle changes. Other significant result was in the psychology of a patient. Motivated patients were more willing and compliant to the lifestyle changes. In addition social support had a meaning in the adherence to care. There were three enabling and preventing forces. Enabling forces to adherence were fear of death, determination and self-control. Preventing factors on the other hand were need for additional support, lack of motivation and poor recall of information.

Conclusions from this literature review were that patients with coronary heart disease need information about the disease, symptoms and healthy diet and lifestyle in cardiac rehabilitation. For healthcare professionals this literature review acts as a guide which includes information that can benefit patient education. For future studies on the subject this literature review can act as a starting point. Understanding the adherence to dietary modifications of coronary heart patient needs more studying.

KEYWORDS:

coronary heart disease, coronary artery disease, dietary adherence, literature review

OPINNÄYTETYÖ (AMK) | TIIVISTELMÄ
TURUN AMMATTIKORKEAKOULU

Hoitotyön koulutusohjelma| Sairaanhoitaja (AMK)

2016 | 25 + 12

Ohjaaja Saara Laaksonen

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AVAINTEKIJÄT SEPELVALTIMOTAUTIPOTILAIDEN ONNISTUNEESEEN RAVINTOMUUTOKSEEN - kirjallisuuskatsaus

Tämän opinnäytetyön tarkoituksena oli selvittää, mitkä ovat ne tärkeät tekijät, jotka saavat sepelvaltimotautipotilaan sitoutumaan ravintomuutokseen sydäntautipotilaan kuntoutustyössä käyttäen vuosina 2006–2016 aikana tehtyjä tutkimuksia.

Opinnäytetyö toteutettiin kirjallisuuskatsauksena. Prosessi oli mahdollisimman systemaattinen seuraten oppikirjojen ohjeistuksia kirjallisuuskatsauksen tuottamisesta. Tutkimuksia etsittiin hakusanoilla ”coronary heart disease” ja ”dietary adherence” käyttäen sairaanhoidon artikkelien internet-tietokantoja; Cinahl Complete, PubMed, Medline (Ovid), EBSCOhost sekä Emerald Insight. Hakuprosessin sekä analyysin jälkeen kirjallisuuskatsauksen tuottamiseen valikoitui 16 tutkimustyötä.

Kirjallisuuskatsauksen tulokset voitiin jakaa kahteen isompaan kategoriaan. Sepelvaltimotautipotilaat sitoutuivat ravintomuutokseen parhaiten kun he saivat tietoa; potilasohjausta taudinkuvasta, oireista sekä elämäntapamuutoksista. Toinen merkittävä tulos oli potilaiden psykologiassa. Motivoituneet potilaat olivat valmiimpia sekä sitoutuneempia elämäntapamuutoksiin. Lisäksi sosiaalisella tuella oli merkitys hoitoon sitoutumisessa. Kolme tukevaa tekijää olivat kuolemanpelko, päättäväisyys sekä itsekuri. Ehkäiseviä tekijöitä muutokseen olivat tarve laajempaan tukeen, huono motivaatio sekä muistamattomuus.

Tästä kirjallisuuskatsauksesta pääteltiin että sepelvaltimotautipotilaat tarvitsevat kuntoutustyössä tietoa taudista, sen oireista sekä terveellisestä ruokavaliosta ja elämäntavoista. Terveysalan ammattilaisille tämä kirjallisuuskatsaus toimii oppaana, jonka sisällön tiedostamalla potilasohjaus voi kehittyä. Tulevaisuuden tutkimustyötä varten tämä kirjallisuuskatsaus voi toimia aloituskohtana. Sepelvaltimotautipotilaan hoitoon sitoutumisen ymmärtäminen vaatii lisää tutkimusta.

ASIASANAT:

sepelvaltimotauti, hoitoon sitoutuminen, kirjallisuuskatsaus

CONTENT

1 ABBREVIATIONS

AHA = American Heart Association

BMI = Body Mass Index

CHD = Coronary heart disease

LDL = Low Density Lipoprotein

WHO = World Health Organization

2 INTRODUCTION

Coronary heart disease is a slowly progressing condition where oxygen-rich blood supplying vessels of the myocardium start to accumulate atherosclerotic matter inside the inner lining of the artery, tunica intima. This matter or plaque consists of vascular smooth muscle cells, inflammatory cells with lipid and collagen (Jackson 2008). Over time this accumulation may start restricting blood flow to the myocardium, in the worst case scenario, causing myocardial infarction and death. It has normally been identified as a lifestyle disease of the higher income western countries (Figure 1) with their lifestyle of poor nutritional value, lack of exercise and the use of alcohol and tobacco products. In the past decades with the rising economics and quality of life in the developing countries, coronary heart disease alongside with other cardiovascular diseases have started to affect more and more people being the number one cause of death worldwide in 2012. (WHO 2014.) (Figure 1)

Coronary heart disease related deaths in Eastern Finland have decreased by 82% among men and 84% among women between years from 1969-1972 to 2012 and it is mainly due to primary prevention of high serum cholesterol levels, management of high blood pressure and cessation of tobacco smoking (Jousilahti et al. 2015). Therefore, it is important that nurses know what the factors influencing a successful care intervention are when working with patients suffering from coronary heart disease.

The purpose of this literature review is to gather and synthesize the key factors that make patients with coronary heart disease adhere to their diet using studies that have been made between the years 2006 to 2016. This review will concentrate on studies that discuss adherence to dietary changes since dietary choices function in all levels of prevention long before medication therapy is needed.

The research question for this review is: “What are the enabling and preventing factors for dietary adherence?”

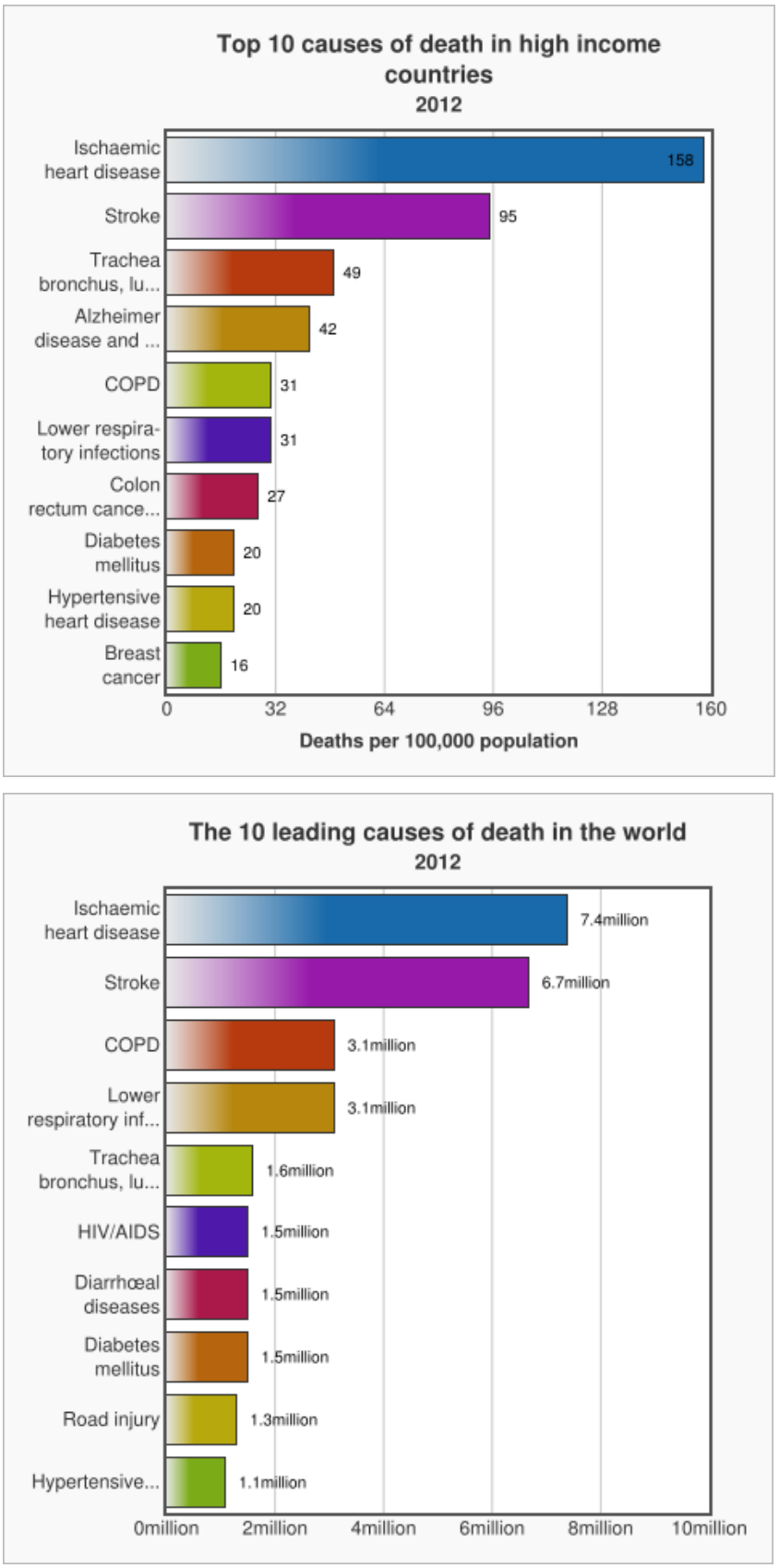

Figure 1. Leading causes of death in high income countries (above) and total (below) in

3 RISK FACTORS OF CORONARY HEART DISEASE

Before deciding a treatment method there should always be a risk assessment made of the patient. Finding the risk factors for each individual will facilitate the following care and is beneficial to prognosis of the disease. Käypä hoito (2013.) lists the following as risk factors for coronary heart disease (Table 1):

Table1. Risk factors of CHD:

Age	
Diabetes Mellitus	x
Hyperlipidemia	x
Hypertension	x
Obesity	x
Genetic factors	
Lack of exercise	x
Tobacco consumption	x

Symbol (x) indicates a risk factor that is modifiable.

Table 1 clearly shows that most of the risk factors related to CHD are indeed modifiable and further, are modifiable through lifestyle changes. Patients might also have multiple risk factors during the assessment. High BMI has been found to correlate with high systolic blood pressure (Rosendorff 2014). Also comorbidities such as Diabetes mellitus and renal dysfunction in the form of chronic kidney disease have been found to increase risk if there is elevation of blood pressure or metabolic syndrome.

4 TREATMENT

Coronary heart disease treatment mostly relies on two aspects: Lifestyle changes and treatment of blood pressure and lipids with medications. Drug treatment of CHD targets to lower blood pressure and maintain serum-lipid levels lower than 5,0 mmol/l for total cholesterol and LDL-levels below 3,0 mmol/l (Käypä hoito 2013). World Health Organization (2007) states that lifestyle changes that lower the risk factors are nutritional changes, physical activity, weight control, smoking cessation and lowered alcohol intake. Healthy nutrition plays a part not only in primary prevention, but also in secondary and tertiary prevention. It is therefore a necessary aspect of treatment protocol which only increases its importance the further the disease progresses and cannot be underestimated. This is why there is a need to pay attention to it.

4.1 Nutritional treatment

Nutritional changes among other modifiable risk factors related to lifestyle choices are the primary method of treatment for coronary heart disease. By changing dietary habits, it is possible to lower several risk factors of CHD including hypertension, dyslipidemia, waist circumference and overweight. “There is a considerable body of evidence regarding the nutritional background of atherosclerosis in general and CHD in particular” (WHO 2007). There are a few dietary guidelines recommended by healthcare professionals to patients with CHD including DASH – dietary approaches to stop hypertension, and Mediterranean diet. These two diets might be the best known nutritional treatment methods globally. DASH diet is approved by respected American Heart Association and the American College of Cardiology. The Mediterranean diet on the other hand is the most studied dietary pattern in the prevention of CHD.

4.1.1 DASH

The DASH diet was developed a couple of decades ago with the funding of US National Institutes of Health to be used as a non-medication option to lower blood pressure. It mainly consists of applying low sodium intake to the diet along with high consumption of fruits and vegetables and low-fat or non-fat dairy products. Also whole grain products are highly favored in this diet type. (dashdiet.org 2016.) DASH diet has been scientifically tested and has proven its blood pressure and other CHD risk factor lowering capabilities. (Paula et al. 2015; Fitzgerald et al. 2013) DASH diet is recommended by AHA and The American College of Cardiology.

4.1.2 Mediterranean diet

The other, possibly better known dietary pattern is the Mediterranean diet. It follows the same principles as the DASH diet: favoring fruits, vegetables and low fat dairy. Also limiting the amount of red meat and trading saturated “hard” fats to unsaturated fats such as olive oil. The Mediterranean diet has also been proven to reduce risk factors of CHD (Bo 2016). This has been achieved by lower blood pressure, lower LDL cholesterol levels and weight loss (Eguaras et al. 2015). A diet pyramid can be seen in figure 2. Products that appear in the bottom of the pyramid should be favored and used frequently, whereas at the top are the foods that should be limited to once-a-month consumption:

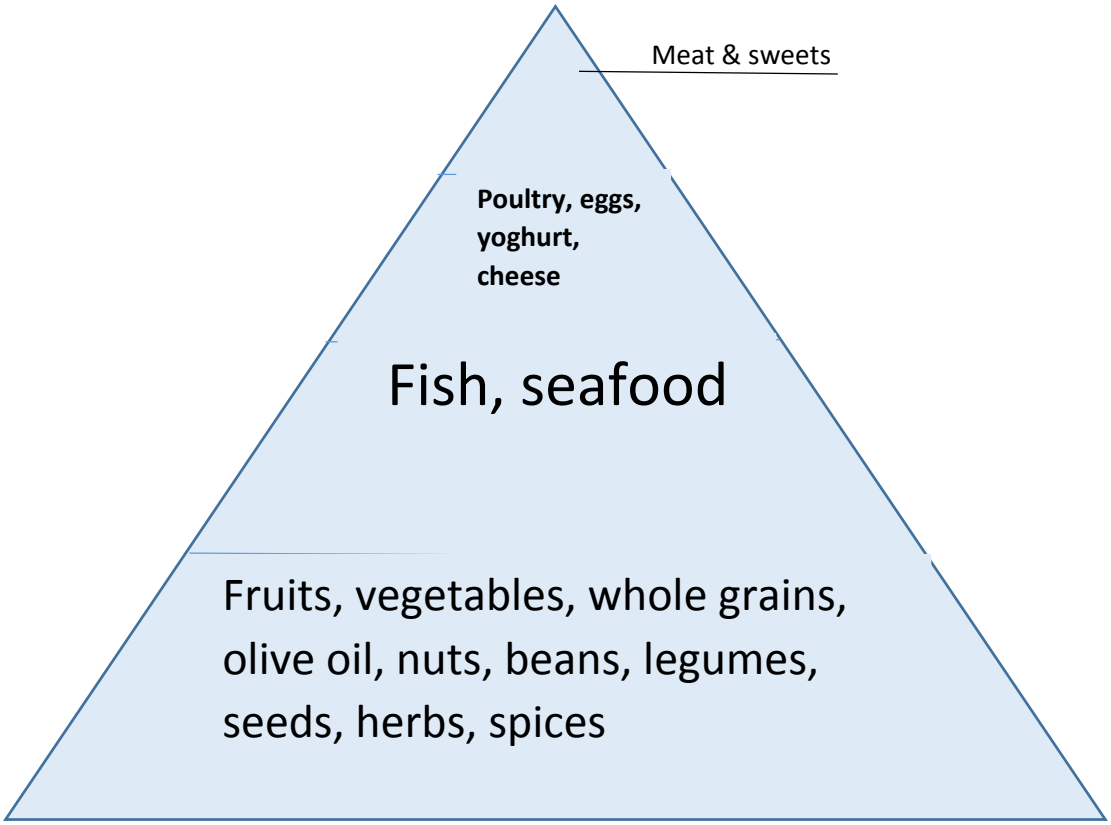

Figure 2. Pyramid showing the ingredients in Mediterranean diet.

Both of the diets aim to lower the amount of dietary sodium, balance the serum cholesterol levels and add dietary fiber. High sodium intake is now known to raise blood pressure and put normotensive individuals at risk of developing hypertension (Takase 2015). Changing the consumed “hard” dietary fat to unsaturated types is known to reduce LDL cholesterol levels in the blood. Similarly, the benefits of high high-density lipoprotein serum levels are well known. Whole grain products are favored for their capability of steadily rising the blood glucose thus avoiding spikes in daily glucose levels. Whole grain products have also shown to lower LDL cholesterol levels.

5 PURPOSE OF THE REVIEW

Purpose of this literature review is to gather and synthesize the key factors that make patients with coronary heart disease adhere to their diet using studies that have been made between the years 2006 to 2016.

Research question used for this review is: “What are the enabling and preventing factors for dietary adherence?”

6 METHODOLOGY

By definition a literature review is “a concise summary of the best available evidence that address sharply defined clinical questions” (Aveyard 2010). Gerrish & Lacey (2013) stated that the aim of a literature review is providing a list as comprehensible as possible of primary studies, both published and unpublished. In other words, a literature review collects and analyses studies that have been made about a topic of interest. This way a reader need not access multiple studies to get an overall view of the information. This is important especially now when computers and internet have enabled a vaster and larger scale supply of knowledge.

Literature review as a research method in healthcare and nursing is seen as a useful tool. Aveyard (2010) rationalizes this by stating that every healthcare worker has a professional duty to be up to date with recent developments and research that informs their practice. Yet it is nearly impossible for individuals to read all of the data provided. The decision of choosing a literature review for this subject was the purpose of gathering up-to-date knowledge about key factors related to nutritional adherence of patients with coronary heart disease.

A protocol for writing a literature review normally includes the following: background and rationale to the review, review question, inclusion criteria, strategies for literature search, quality assessment, data extraction; proposed analysis, reporting and dissemination. It also can include members of the review team, project timetable and possible costs (Gerrish & Lacey 2013).

6.1 Background and rationale to the review

In the beginning of this writing process the author used a basic protocol for literature reviews where it states that first, there needs to be a rationale to carry on with the work for a certain subject. Questions to be asked for example would be why there is a need for a specific review. The author could not find a literature

review that addressed the same subject and with the interest to find more knowledge decided to pursue the writing process.

Several studies have been made about the knowledge of patients with CHD which indicated that even though the majority of study subjects have knowledge about the risk factors of CHD and how to minimize them, only a portion seem to follow the given guidelines. Pinheiro et al. (2014) conducting a survey in Brazil found out that in a sample (n=40) of patients, 92,5% answered correctly to the questions regarding correlation between risk factors of CHD and lifestyle. In addition, 97,5% of the sample correctly answered the questions about proper diet recommended for CAD patient. “However, 40.0% of respondents reported not properly controlling their diets” (Pinheiro et al. 2014.) Also, results found by Elizebeth & Sams (2015) and Österberg et al. (2010) pointed out that patients with CHD tend to have knowledge about dietary choices and risk factors for CHD.

These results lead to the interest to find out what are the key factors that make coronary heart disease patients adhere to dietary modifications. This literature review was commissioned by Turku university of applied sciences. (Appendix 1)

6.2 Research question

According to Aveyard (2010) a research question for a literature review is clearest as a concrete question, either interrogative or declarative. Important is also avoiding leading in a question. A question should be as neutral as possible without any assumptions. Without much previous knowledge on the subject the author could not really assume any results that would occur with this review and could stay neutral. While refining a research question, the subject should be targeted whilst avoiding too narrow of a subject. (Aveyard 2010.) To narrow down the subject the author wanted to include only patients with CHD bearing in mind that comorbidities could be covered in more studies than expected. As far as vast treatment methods that are used in the prevention of CHD the author

wanted to concentrate on dietary treatment. Research question for this literature review was “What are the enabling and preventing factors for dietary adherence?”

Using a PICO method is a useful way of determining search terms for a literature review and (Gerrish & Lacey 2013) state that “PICO works well for questions about healthcare interventions”. Table 2 indicates the basic PICO model and also the search term process of this review.

Table 2. The PICO method used in this literature review:

Patient / Problem	Patient with coronary heart disease
Outcome	Adherence to dietary changes

Since the main theme of this review is phenomenon rather than an intervention the author used “Patient(s)” and “Outcome” without applying “Intervention” or “Comparison”.

In order to avoid too narrow search term coverage, it would be advisable to come up with synonyms for the initial terms like in this literature review terms “coronary artery disease” and “coronary heart disease” are synonyms. Also terms “adherence” and “compliance” or “dietary” and “nutritional” are often used interchangeably.

6.3 Inclusion criteria

Inclusion criteria according to Gerrish & Lacey (2013) consists of clear documentation about inclusion or exclusion criteria for the search process. There has to be well reasoned explanation for each criteria being used. Inclusion criteria may consist of language of the studies, their publication date and type of publication. (Gerrish & Lacey 2013)

For this literature review the author used publication years between 2006 and 2016. Reason for this was to collect data that is up-to-date and to include relevant studies. Other criteria were to search for studies that used either English of Finnish as a language due to limited linguistic knowledge of the author. Due to insufficient funds only studies with free access were included as well as only full texts excluding studies with only free abstracts. The research question was precisely limited to patients with coronary heart disease. Studies that included patients without the diagnosis were excluded. All type of study methods was included for the data collection. Table 3 clarifies the inclusion/exclusion criteria for this review.

Table 3. Criteria used to narrow down the literature results:

Inclusion criteria:	Exclusion criteria:
Studies published between years of 2006-2016	Studies published before year 2006
Studies in English or Finnish	Studies in other languages than English or Finnish
Free & full text studies	Studies with paid access to the full text or free abstracts
All type of study methods	

6.4 Literature search

It is of great importance to outline all sources used during a review as well as document thoroughly the search strategy. In a literature review the researcher uses highly sensitive search strategies “to ensure that no relevant studies are overlooked” (Gerrish & Lacey 2013).

This literature review used the following electronic internet databases: CINAHL Complete, EBSCOhost, Emerald Insight, Medline (Ovid) and PubMed. Search begun with the application of search terms and Boolean operators “coronary artery disease AND dietary compliance” for each database. After examining the search results the author decided that using the aforementioned search terms did not give enough studies that were also relevant for the purpose. Eventually the search continued by modifying search terms to “coronary heart disease

AND dietary adherence". These search terms were then applied to each database with the following results presented in table 4:

Table 4. Results of studies by a searched database:

Database:	**Number of studies:**
CINAHL Complete	14
EBSCOhost	52
Emerald Insight	40
Medline (Ovid)	158
PubMed	324

Next, limiters (Table 3) were applied to the results. These limiters drastically lowered the amount of studies available. To find the most relevant data, the author proceeded to include or exclude studies first, based on the title and later based on the abstract. Finally accepted relevant studies were read completely. Table 5 proceeds to indicate this process.

Table 5. Exclusion process by searched database:

Database:	Results with limiters:	Included by title:	Included by abstract:	Included by full text:
CC	2	2	2	2
EB	7	1	1	1
EI	16	4	4	0
ML	8	1	1	1
PM	95	28	19	12

(CC) CINAHL Complete, (EB) EBSCOhost, (EI) Emerald Insight, (ML) Medline (Ovid), (PM) PubMed

The research question aimed to include patients that had been diagnosed with CHD. One study explored motivational traits of one of the risk factors of CHD, obese, weight loss patients. The author decided it wasn't accurate nor precise enough, as far as study subject inclusion to this review.

Total number of studies accepted to this stage of review equals to 16. From these studies 2 were systematic reviews, 9 questionnaires from which 2 were qualitative and 7 quantitative type, 2 randomized control trials, 2 cohort studies and 1 case-control study.

6.5 Critical appraisal

Critical appraisal is a term used to describe the process of finding out whether a study has been conducted in the best way possible. Appraising a study is a mean to assess its quality and relevancy. It is an essential part of a literature review. In principle, according to Aveyard (2010), "…all of the published material you use in your literature review should be critiqued for its relevance and for its strengths and limitations."

There are several critical appraisal tools that can be found in the internet. For the purpose of this review, CASP checklist (CASP 2014) was chosen. The rationale behind the decision is that CASP checklists have been specialized for the majority of different research methods, the kind that are found in this review. CASP checklists include ten to eleven questions that address the validity of a study systematically critiquing the content. An example of a CASP checklist can be seen in Appendix 2.

Each of the studies were checked for their validity using this checklist to see if they included a clear purpose, precise descriptions of the study method and sample collection. The studies had to include the result and conclusions added with possible limitations. Peer review was not necessary during the data search but provided an extra amount of validity.

The studies included in this literature review were fairly from around the world but mainly concentrating on western developed countries such as the UK, United States and also Asian-Oceanian countries like Australia and Japan. This could pose a bias with the results limiting to countries with better healthcare systems and not providing a full perspective concerning for example differences in culture and customs.

The study population on the other hand ranged from less than 10 to large scale follow-up studies with more than a thousand participants. Surely, it is fair to state that studies with large samples may provide more accurate results. Data collection methods may on the other hand prevent more personalized and individual results. Self-survey questionnaires are easy to send out to the patients but could provide results that are a bit biased. Patients may give answer that make their adherence and dietary changes look better than in reality they are. Interviewing patients takes more time and could provide answers that the patients think the interviewee wants to hear.

The studies provided fairly detailed explanations on the course of the process using statistics and even quotes where it was possible. These individual quotations provided an interesting and personalized look on the subject.

7 RESULTS

16 studies that were analyzed for this literature review seemed to fold into two major categories. The majority of researches studied the effect of patient education and patient knowledge to adherence to dietary changes suitable for a patient with CHD. Some studies concentrated on the personal and characteristic traits of the patients.

7.1 Enabling factors

A very important part of lifestyle change is modifying learned behavior. This includes changing what a person chooses for their nutrition and in cardiac rehabilitation, dietary changes are found to be somewhat challenging. In a small scale study, it was found that driving forces for dietary changes were fear of death, determination and self-control (Doyle et al. 2012). Motivation and self-efficacy are important factors in a process of change. Motivation was observed to be an important factor in a literature review that addressed the effects of motivational interviewing (Thompson et al. 2011), as well as a study that concluded that changing the patients' readiness to change through self-efficacy and emotional representation correlated with dietary adherence (Platt et al. 2014).

Positive effects of support were also observed in another study were patients who attended meetings with a cardiologist or a general practitioner were more likely to attend cardiac rehabilitation compared to those patients that did not see their doctors regularly. (Hyun et al. 2016.) Not only support from healthcare staff but also peer support was found successful in adherence to lifestyle changes. A web-based support site was tested to see if patients that got peer support from other website users would be more compliant to lifestyle changes. This indeed happened. (Schweier et al. 2014.) Even though the study used only patients self-reported results, it provides a great opportunity for future

implications. Social support from family members was also found to give patients better possibility to succeed (Yehle et al. 2012).

Patient education seemed to have effect on a successful lifestyle change. Two studies showed that providing information to the patient increased adherence to the cardiac rehabilitation program (Tawalbeh et al. 2014; Dale et al. 2015). Alongside with the results was also a literature review which suggested that therapeutic patient education would increase adherence supporting the two aforementioned studies (Laburnee et al. 2012). While these positive results were only observed for a 3-month period, plateauing at 6-month follow-up (Dale et al. 2015) and 1-month follow-up (Tawalbeh et al. 2014) it shows that more knowledge gives more positive results. In Germany on the other hand, a cohort study observed that patient adherence was still good after three years since the rehabilitation (Twardella et al. 2006). Another study to back the claim that educating a patient enables them to adhere better concluded that the most educated part of patient dietary education was obeyed the most (Bruckert et al. 2012). Similarly, two of the most influential factors for dietary adherence were group diet classes and individual diet counseling (Turk-Adawi et al. 2013). Somewhat same results but for longer period of adherence were found in a French study where two study groups took part in a nutritional survey six months after cardiac rehabilitation program (Froger-Bombas et al. 2009*)*. Kitagawa et al. (2012) found out in their questionnaire a relationship between perception of one's health and sustainability of better lipid values through medication, diet and exercise. There seems to be a better chance of lowering CVD risks for patients with proper patient education (Athyros et al. 2011). This goes to show that with more information a patient might be more equipped to better results in lifestyle changes.

7.2 Preventing factors

On the opposite side there were three negative forces to dietary adherence that Doyle et al (2012) found. They were the need for additional support, lack of willpower and poor recall of information. Some patients felt that they needed

more support especially from the healthcare staff. Lack of willpower seemed to hold some patients back from going through with their change. Also poor recall of information did not facilitate their success. Patients had a hard time remembering parts of dietary education that they had received during a cardiac rehabilitation program. Another study concluded similar results with the lack of information preventing successful adherence to dietary changes (Chaturvedi et al. 2016).

8 DISCUSSION

This literature review suggests that there are factors that can affect patient's dietary adherence positively. With information about the condition, illness perception, ways to manage and improve the quality of life there is a greater probability to get an individual with CHD realize the potential benefits of changing their lifestyle as well as keeping to the diet. One might think that the only tools for healthcare staff would be simply informing and educating the patient about how one should apply healthy ways of living but there is also a lot of psychology involved in the process. A patient that has experienced a myocardial infarction might deal with a lot of emotions ranging from confusion to fear of death. Patient education is therefore also a matter of timing. Some people might be very alert of the new information and some might be in denial. Adherence to diet also seemed to decrease after discharge from hospital. This may imply that when patients are surrounded by healthcare staff they are much compliant to rehabilitation. This highlights the importance of support coming from patient's close ones. Peer support systems may be an effective and cost effective way of motivating and providing support to a patient outside a hospital.

A lot of the studies in this review only addressed dietary adherence a few months after a discharge or the baseline period of the research period. There is still a need for more studies on how patients are able to adhere to lifestyle changes after a longer period of time, possibly when the symptoms have been diminished to a level where they no longer provide motivation for healthier lifestyle. These studies of coronary heart disease patients were mostly very small scale studies.

There is no knowledge of conflict of interest with this review.

This literature review had some limitations. Firstly, there was only one researcher doing this review. This may expose the work for errors due to possibility of bias during the data search. This review process was not funded and therefore only free studies were used. This greatly compromises the validity of the review limiting the access to all possible studies. To make this review as up-to-date as possible the search was done for studies made in the past

decade. There is no knowledge on behalf of the author if there has been made similar studies much earlier than year 2006.

9 CONCLUSION

In conclusion, sustained dietary adherence is a combination of educational factors provided by the healthcare workers through different cardiac rehabilitation programs as well as patient's personal characteristics, beliefs and attitudes. Patient's motivation can be increased using these programs effectively to some extent. Also providing social support to the patient, whether it be from healthcare professionals, other patients or family members serve as a strengthening aspect that may likely produce positive effects.

As far as preventing factors, lack of motivation presented by low self-restriction, willpower, social support and possibly depression is a major part of the psychological process that patients with CHD may go through.

Finally, there are some propositions by the author for future studies that could address the following subjects: How do patients with coronary heart disease adhere to healthy diet in longer period of time? Also, what form of support do patients feel is the best way of supporting lifestyle change?

10 REFERENCES

Almerud-Österberg, S., Baigi, A., Bering, C. & Fridlund, B. 2010, "Knowledge of heart disease risk in patients declining rehabilitation", *British Journal of Nursing,* vol. 19, no. 5.

Athyros, V.G., Hatzitolios, A.I., Karagiannis, A., Savopoulos, C., Katsiki, N., Tziomalos, K., Papagianni, A., Kakafika, A., Gossios, T.D., Mikhailidis, D.P. & IMPERATIVE Collaborative Group 2011, "IMproving the imPlemEntation of cuRrent guidelines for the mAnagement of major coronary hearT disease rIsk factors by multifactorial interVEntion. The IMPERATIVE renal analysis", *Archives of medical science : AMS,* vol. 7, no. 6, pp. 984-992.

Aveyard, H. (ed) 2010, *Doing A Literature Review In Health And Social Care : A Practical Guide*, 2nd edn, Open University Press.

Bo, S., Ponzo, V., Goitre, I., Fadda, M., Pezzana, A., Beccuti, G., Gambino, R., Cassader, M., Soldati, L. & Broglio, F. 2016, "Predictive role of the Mediterranean diet on mortality in individuals at low cardiovascular risk: a 12-year follow-up population-based cohort study", *Journal of Translational Medicine,* vol. 14, no. 91.

Bruckert, E., Pouchain, D., Auboiron, S. & Mulet, C. 2012, "Cross-analysis of dietary prescriptions and adherence in 356 hypercholesterolaemic patients", *Archives of cardiovascular diseases,* vol. 105, no. 11, pp. 557-565.

Carretero, O.A. & Oparil, S. 2000, "Essential Hypertension: Part I: Definition and Etiology", *Circulation,* vol. 101, no. 3, pp. 329-335.

Chaturvedi, R., Singh, N., Boolchandani, R. & Chandra, R. 2012, "Knowledge, attitudes and practices on CHD in businessmen and patients", *Nutrition & Food Science,* vol. 42, no. 3, pp. 148-155.

Critical Appraisal Skills Programme (CASP). 2014. CASP Checklists. Available: http://www.casp-uk.net/#!casp-tools-checklists/c18f8

Doolan-Noble, F., Varnfield, M., Pfaeffli Dale, L., Whittaker, R., Jiang, Y., Stewart, R., Rolleston, A. & Maddison, R. 2015, "Text Message and Internet Support for Coronary Heart Disease Self-Management: Results From the Text4Heart Randomized Controlled Trial", *Journal of Medical Internet Research,* vol. 17, no. 10, pp. . doi:10.2196/jmir.4944.

Doyle, B., Fitzsimons, D., McKeown, P. & McAloon, T. 2012, "Understanding dietary decision-making in patients attending a secondary prevention clinic following myocardial infarction", *Journal of Clinical Nursing,* vol. 21, no. 1, pp. 32-41.

Eckel, R.H., Jakicic, J.M., Ard, J.D., Hubbard, V.S., de Jesus, J.M., Lee, I.M., Lichtenstein, A.H., Loria, C.M., Millen, B.E., Houston Miller, N., Nonas, C.A., Sacks, F.M., Smith, S.C.J., Svetkey, L.P., Wadden, T.W. & Yanovski, S.Z. 2013, *AHA/ACC guideline on lifestyle management to reduce cardiovascular risk: a report of the American College of Cardiology American/Heart Association Task Force on Practice Guidelines*, American heart Association.

Eguaras, S., Toledo, E., Hernández-Hernández, A., Cervantes, S. & Martínez-González, M.A. 2015, "Better Adherence to the Mediterranean Diet Could Mitigate the Adverse Consequences of Obesity on Cardiovascular Disease: The SUN Prospective Cohort", *Nutrients,* vol. 7, no. 11.

Elizebeth, B. & Sams, L. 2015, "Assessment of Knowledge of Patient Regarding Coronary Artery Disease among Patients in Selected Hospitals at Mangalore", *Asian Journal of Nursing Education and Research,* vol. 5, no. 2, pp. 177-179.

Fitzgerald, K.C., Chiuve, S.E., Buring, J.E., Ridker, P.M. & Glynn, R.J. 2012, "Comparison of associations of adherence to a Dietary Approaches to Stop Hypertension (DASH)-style diet with risks of cardiovascular disease and venous thromboembolism", *Journal of Thrombosis and Haemostasis,* vol. 10, no. 2, pp. 189-198.

Froger-Bompas, C., Laviolle, B., Guillo, P., Letellier, C., Ligier, K., Daubert, J.C. & Paillard, F. 2009, "Sustained positive impact of a coronary rehabilitation programme on adherence to dietary recommendations", *Archives of cardiovascular diseases,* vol. 102, no. 2, pp. 97-104.

Gerrish, K. & Lacey, A. (eds) 2013, *The Research Process in Nursing*, 6th edn, Wiley-Blackwell.

Heller, M. 2016, April 4-last update*, What Is the DASH Diet?*. Available: http://dashdiet.org/what_is_the_dash_diet.asp.

Hyun, K., Brieger, D., Chow, C.K., Ilton, M., Amos, D., Alford, K., Roberts-Thomson, P., Atkins, K.R. & Redfern, J. 2016, "Impact of medical consultation frequency on risk factors and medications 6 months after acute coronary syndrome", *Public health research & practice,* vol. 26, no. 1, pp. 10.17061/phrp2611606.

Jackson, G. (ed) 2008, *Acute Coronary Syndromes*, Oxford University Press.

Jousilahti, P., Laatikainen, T., Peltonen, M., Borodulin, K., Männistö, S., Jula, A., Salomaa, V., Harald, S., Puska, K. & Vartiainen, E. 2016, ,
Primary prevention and risk factor reduction in coronary heart disease mortality among working aged men and women in eastern Finland over 40 years: population based observational study [Homepage of BMJ], [Online]. Available: http://www.bmj.com/content/352/bmj.i721January, 2015].

Kervinen, H. 2013, "Sepelvaltimotauti" in *Lääkärin käsikirja* Duodecim, .

Kitagawa, Y., Teramoto, T., Daida, H. & APPROACH-J Study group 2012, "Adherence to preferable behavior for lipid control by high-risk dyslipidemic Japanese patients under pravastatin treatment: the APPROACH-J study", *Journal of Atherosclerosis and Thrombosis,* vol. 19, no. 9, pp. 795-805.

Labrunee, M., Pathak, A., Loscos, M., Coudeyre, E., Casillas, J.M. & Gremeaux, V. 2012, "Therapeutic education in cardiovascular diseases: state of the art and perspectives", *Annals of physical and rehabilitation medicine,* vol. 55, no. 5, pp. 322-341.

Nikkilä, M. 2013, "Kohonneen verenpaineen hoito" in *Lääkärin käsikirja* Duodecim, .

Paula, T.P., Viana, L.V., Neto, A.T., Leitão, C.B., Gross, J.L. & Azevedo, M.J. 2015, "Effects of the DASH Diet and Walking on Blood Pressure in Patients With Type 2 Diabetes and Uncontrolled Hypertension: A Randomized Controlled Trial.", *Journal of Clinical Hypertension,* vol. 17, no. 11, pp. 891-901.

Pinheiro, G., Silqueira, S., Corrêa, A., Donoso, M. & Loureiro, F. 2014, "Knowledge of coronary heart disease patients regarding coronary artery disease: implications for secondary prevention", *Revista de Enfermagem,* vol. 8, no. 2.

Platt, I., Green, H.J., Jayasinghe, R. & Morrissey, S.A. 2014, "Understanding Adherence in Patients With Coronary Heart Disease: Illness Representations and Readiness to Engage in Healthy Behaviours", *Australian Psychologist,* vol. 49, no. 2, pp. 127-137.

Rosendorff, C., Lackland, D., Allison, M., Aronow, W. & Black, H. 2014, "Treatment of hypertension in patients with coronary artery disease.", [Online], . Available from: http://hyper.ahajournals.org/content/early/2015/03/30/HYP.0000000000000018.full.pdf.

Schweier, R., Romppel, M., Richter, C., Hoberg, E., Hahmann, H., Scherwinski, I., Kosmutzky, G. & Grande, G. 2014, "A web-based peer-modeling intervention aimed at lifestyle changes in patients with coronary heart disease and chronic back pain: sequential controlled trial", *Journal of medical Internet research,* vol. 16, no. 7, pp. e177.

Suomalainen Lääkäriseura Duodecimin & Suomen Sisätautilääkärien Yhdistys ry 2013, *Dyslipidemiat*, Duodecim, Helsinki.

Takase, H., Sugiura, T., Kimura, G., Ohte, N. & Dohi, Y. 2015, "Dietary Sodium Consumption Predicts Future Blood Pressure and Incident Hypertension in the Japanese Normotensive General Population", *Journal of the American Heart Association,* vol. 4, no. 8.

Tatiana, P., Luciana, V., Alessandra, N., Cristiane, N., Jorge, G. & Mirela, A. 2015, " Effects of the DASH Diet and Walking on Blood Pressure in Patients With Type 2 Diabetes and Uncontrolled Hypertension: A Randomized Control led Trial", *The Journal of Clinical Hypertension,* vol. 17, no. 11, pp. 895.

Tawalbeh, L. & Ahmad, M. 2014, "The Effect of Cardiac Education on Knowledge and Adherence to Healthy Lifestyle", *Clinical Nursing Research,* vol. Volume 23(3), pp. 245-258.

Thompson, D., Chair, S., Chan, S., Astin, F., Davidson, P. & Ski, C. 2011, "Motivational interviewing: a useful approach to improving cardiovascular health?", *Journal of Clinical Nursing,* vol. 20, no. 9, pp. 1236-1244 9p.

Turk-Adawi, K.I., Oldridge, N.B., Tarima, S.S., Stason, W.B. & Shepard, D.S. 2013, "Cardiac rehabilitation patient and organizational factors: what keeps patients in programs?", *Journal of the American Heart Association,* vol. 2, no. 5, pp. e000418.

Twardella, D., Merx, H., Hahmann, H., Wusten, B., Rothenbacher, D. & Brenner, H. 2006, "Long term adherence to dietary recommendations after inpatient rehabilitation: prospective follow up study of patients with coronary heart disease", *Heart (British Cardiac Society),* vol. 92, no. 5, pp. 635-640.

World Health Organization 2014, *, The top 10 causes of death.* [Homepage of World Health Organization], [Online]. Available: http://www.who.int/mediacentre/factsheets/fs310/en/.

World Health Organization 2007, *Prevention of Cardiovascular Disease: Pocket Guidelines for Assessment and Management of Cardiovascular Risk*, WHO Press.

Yehle, K.S., Chen, A.M., Plake, K.S., Yi, J.S. & Mobley, A.R. 2012, "A qualitative analysis of coronary heart disease patient views of dietary adherence and web-based and mobile-based nutrition tools", *Journal of cardiopulmonary rehabilitation and prevention,* vol. 32, no. 4, pp. 203-209.

11 APPENDICES

Appendix 1. Thesis commission form.

THESIS COMMISSION AGREEMENT 1

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Degree programme: DP in nursing

THESIS

Topic / working title: Key factors of successful adherence to dietary modifications for patients with coronary heart disease – a literature review

Due date: 25.5.2016

EMPLOYER

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THESIS COMMISSION AGREEMENT

-r U RUN AMMATTIKORKEAKOULU
TURKU UNIVERSITY OF APPLIED SCIENCES

TERMS OF AGREEMENT FOR A COMMISSIONED THESIS

SUPERVISION AND RESPONSIBILITIES

The student is responsible for the completion and the results of the thesis. Turku University of Applied Sciences is responsible for the supervision of the thesis process. The employer agrees to supply the student with all the information and material needed in the thesis work, and to advise the student from the point of view of the employer organization.

RIGHTS

The copyright of the thesis remains with the author, that is, the student. In addition to copyright, valid legislation concerning other immaterial rights shall be obeyed.

EMPLOYMENT RELATIONSHIP AND EXPENSES

The employer and the thesis worker shall agree separately on the possible employment relationship, compensation paid for the work and reimbursement of expenses possibly caused by the thesis process.

PUBLICIZING THE RESULTS AND CONFIDENTIALITY

A written report on the thesis process shall be prepared in accordance with the instructions of Turku University of Applied Sciences.

Copies of the written report shall be delivered to the employer and submitted to the collections of the library, or published in an electronic form in the electronic library.

The thesis report to be published must be prepared so that it contains no professional or business secrets or other information deemed confidential in the Finnish Act on the Openness of Government Activities (621/1999); instead, they shall be left as the background material for the thesis. In the assessment of the thesis, both the published and the confidential part shall be considered.

The employer and the student agree not to disclose to a third party any confidential information or documents revealed during the thesis process, or in negotiations held before or after the process. A representative of the employer organization shall be given a possibility to read the thesis report not later than fourteen (14) days prior to its intended publishing date. The employer shall, prior to the publishing date mentioned above, state which confidential sections should not be published.

Which confidential professional or business materials will not be published?

WE HAVE MUTUALLY AGREED ON THE COMPLETION OF THE THESIS PROCESS AS DESCRIBED ABOVE

Q) / 4 20 (6

17 / 5 20 16

Student

Employer

APPENDIX: THESIS PLAN

Print

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Appendix 2. CASP checklist.

11 questions to help you make sense of a trial

How to use this appraisal tool

Three broad issues need to be considered when appraising the report of a randomised controlled trial:

- **Are the results of the trial valid? (Section A)**
- **What are the results? (Section B)**
- **Will the results help locally? (Section C)**

The 11 questions on the following pages are designed to help you think about these issues systematically.
The first two questions are screening questions and can be answered quickly. If the answer to both is ***yes***, it is worth proceeding with the remaining questions.

There is some degree of overlap between the questions, you are asked to record a ***yes***, ***no*** or ***can't tell*** to most of the questions. A number of prompts are given after each question. These are designed to remind you why the question is important. Record your reasons for your answers in the spaces provided.

There will not be time in the small groups to answer them all in detail!

These checklists were designed to be used as educational tools as part of a workshop

(A) Are the results of the trial valid?

Screening Questions

1. Did the trial address a clearly focused issue? ❒ **Yes** ❒ **Can't tell**

❒ **No**

Consider: An issue can be 'focused' In terms of

- The population studied
- The intervention given
- The comparator given
- The outcomes considered

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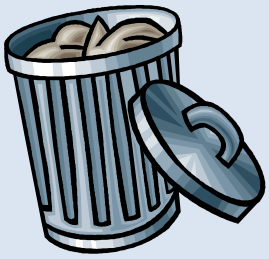
2. Was the assignment of patients to treatments ❒ **Yes** ❒ **Can't tell**

❒ **No** **randomised?**

Consider:

- How was this carried out, some methods may produce broken allocation concealment
- Was the allocation concealed from researchers?

Is it worth continuing?



Detailed questions

3. Were patients, health workers and study personnel blinded?

❒ Yes ❒ Can't tell ❒ No

Consider:

- Health workers could be; clinicians, nurses etc
- Study personnel – especially outcome assessors

---

4. Were the groups similar at the start of the trial?

❒ Yes ❒ Can't tell ❒ No

Consider: Look at

- Other factors that might affect the outcome such as age, sex, social class, these may be called baseline characteristics

---

5. Aside from the experimental intervention, were the groups treated equally?

❒ Yes ❒ Can't tell ❒ No

6. Were all of the patients who entered the trial properly accounted for at its conclusion?

❒ Yes ❒ Can't tell ❒ No

Consider:

- Was the trial stopped early?
- Were patients analysed in the groups to which they were randomised?

(B) What are the results?

7. How large was the treatment effect?

8. How precise was the estimate of the treatment effect?

Consider:

- What outcomes were measured?
- Is the primary outcome clearly specified?
- What results were found for each outcome?
- Is there evidence of selective reporting of outcomes?

Consider:

- What are the confidence limits?
- Were they statistically significant?

(C) Will the results help locally?

9. Can the results be applied in your context? ❒ **Yes** ❒ **Can't tell**

❒ **No** **(or to the local population?)**

Consider:

- Do you have reason to believe that your population of interest is different to that in the trial ? If so, in what way?

10. Were all clinically important outcomes ❒ Yes ❒ Can't tell

❒ No considered?

Consider:

- Is there other information you would like to have seen?
- Was the need for this trial clearly described?

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11. Are the benefits worth the harms and costs? ❒ Yes ❒ Can't tell

❒ No

Consider:

- Even if this is not addressed by the trial, what do you think?