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Research Article

Is secondary prevention information before discharge adequate after percutaneous coronary intervention?

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Summary

Introduction: Implementation of prevention strategies for patients with coronary artery disease (CAD) is essential, but many fall short of reaching their goals. Patients often perceive themselves as healthy and are less motivated to change lifestyle. To obtain better results patients need repeated information, preferably with motivational and person-centered approaches.

Aims: To investigate whether health care providers inform CAD patients about risk factors and lifestyle changes at a percutaneous coronary intervention unit. Also to investigate whether the information given at discharge included secondary prevention management and if motivational and person-centered approaches were used.

Methods: This is a descriptive, observational study that includes both a qualitative and quantitative design. Physicians and nurses working at a percutaneous coronary intervention (PCI) unit and physicians at a coronary care unit (CCU) participated. A staff nurse observed and noted what information the patients received at the PCI unit. At the CCU, observations regarding secondary prevention strategies during the discharge counselling were performed.

Results: There were 50 observations made at the PCI unit. The information mainly consisted of tobacco consumption, physical activity and diet.

During the 31 discharge counselling sessions the diagnosis, interventional procedure and medical treatment were frequently included. Most patients received little or no person-centered or motivational counselling.

Conclusion: Nearly all patients at the PCI unit received information about the consequence of tobacco consumption, and more than half about the beneficial effects of physical activity. In contrast, the counselling at discharge need to focus more on behavioral changes and a motivational and person-centered approach.

Introduction

Several important risk factors known to influence the incidence of coronary artery disease (CAD) are tobacco consumption, physical inactivity, unhealthy diet and psychosocial stress [1]. Implementation of prevention strategies, such as risk factor management, lifestyle changes and pharmacological optimization, are highly recommended in patients with CAD [2]. However, despite these recommendations, patients' compliance to secondary prevention is unsatisfying. In the EUROASPIRE V registry [3], 55% were persistent smokers six months after the event, 66% were physically active, 42% had a blood pressure ≥140/90 mmHg and 71% had low-density lipoprotein cholesterol ≥1.8 mmol/L.

In an observational study [4] of patients treated with percutaneous coronary intervention (PCI) the patients believed that non-modifiable risk factors (e.g., heredity

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and age) are the strongest predictors of CAD. The patients also considered themselves as "healthy" after revascularization. They need to know how to avoid recurrent events and that CAD is a chronic condition. To improve the patients' understanding of their disease health care providers must use an understandable language and acknowledge the patients' personal view of the disease [2].

In the early phase after admission to hospital the patient is probably most motivated to change an unhealthy lifestyle to make treatment efficacious. Therefore, it is crucial that the interventional cardiologist follow the guidelines [5,6] by informing all eligible patients about secondary prevention strategies. It is also important that all health care providers deliver the same message [5]. The European Guidelines [2] recommend individualized and motivational information to improve behavior change. Optimized information would be interactive [5], both oral and written, and preferably be repeated [2].

One recommended method of communication to change behavior entails motivational interviewing. Briefly, motivational interviewing is a client-centered approach to elicit behavior change by prompting patients to explore and resolve ambivalence. Such an approach might facilitate lifestyle behavior changes, a reduction in several risk factors and improve compliance [7,8,].

Another way to improve communication is to use a person-centered approach. This method involves an individualized approach and interaction between the patient and health care providers, where the patient is an active member of the treatment process [9]. Person-centered care has been found to improve compliance and adherence to behavioral changes [10,11].

The first aim of the present study was to investigate whether physicians and nurses inform CAD patients about risk factors and lifestyle changes already at the PCI unit.

The second aim was to examine what kind of secondary prevention information the physicians offered their patients during the discharge counselling sessions at the coronary care unit (CCU) whether this information encompassed motivational and person-centered approaches.

Methods

The study was of a descriptive and observational design containing both qualitative and quantitative methods.

Population

Ordinary physicians and nurses working at the PCI unit were eligible for inclusion in the first part of the study. Physicians working at the CCU, responsible for the discharge, were included in the second part of the study.

Five physicians and 11 nurses at the PCI unit at one university hospital in Sweden participated in the study (one physician and one nurse declined participation). At the CCU, 27 physicians were asked to participate and all accepted (14 women, 13 men).

Procedure

The observations were conducted at two units: the PCI unit and the CCU (discharge).

At the PCI unit, physicians and nurses received oral and written information about the study one month before the investigation started. All physicians and nurses gave their written informed consent before inclusion in the study.

In conjunction with the PCI or directly thereafter, a physician, nurse, or both were expected to inform the patients about the main risk factors for CAD and motivate the patients to change lifestyle. One staff nurse, who was not directly involved in the PCI

treatment, observed and noted what kinds of information (if any) were given to the patient. The information was documented in a special observation form designed for the study. The completed observation forms were kept at the office of the principal researcher.

The patients were admitted to hospital for myocardial infarction (MI; typical symptoms, pathological troponin, signs of ischemia at ECG, or both) and underwent PCI treatment.

The observations at the PCI unit started in May 2016 and lasted for six months. During the study period, 236 patients with MI underwent PCI. Of these 236 patients, 50 were observed in the present study. There was no selection procedure for these 50 patients. The reason for the failed observations depended on whether the actual situation permitted any observation for high workload, if any physician or nurse included in the study worked at the time the PCI treatment was administered or, in some cases, inclusion in the study was forgotten.

At the CCU, physicians were asked to participate. They received oral and written information about the study one month before study start and all gave their written informed consent.

The first author checked eligible patients for discharge several times per week by asking the responsible nurse or physician. When a patient was ready for discharge, the author contacted the physician responsible for the discharge counselling to request consent to observe. All patients were asked if an additional person could attend the discharge counselling, no informed consent was required from the patient. The counselling took place in a single room at the CCU. The author observed the sessions in the same room as the physician and the patient, always trying to be as discreet as possible. Any questions the patients had for the observer were answered after the observation period ended.

The information that the patients received from the physician was noted in an observation form designed for the study and then directly transported to the researcher's office where it was kept locked.

The observation period at the CCU took place from January to June 2017.

Instrument

A special observation form was constructed for the observations. The observation form used at the PCI unit contained the statement, "Information about risk factors and lifestyle changes is given to the patient" with the alternatives "Yes" or "No". If no information was given, the following other alternatives could be marked: "The patient was too sick", "No reason for not informing the patient", "Discussion about coronary bypass grafting", "Hearing defect" or "No risk factors". The profession of the person who informed the patient was documented as "Physician" or "Nurse". At the end of the observation form, a free-text field was available to list secondary prevention strategies.

For the documentation of the discharge counselling sessions, the observation form was used containing the physicians' sex, the patients' current risk factors, the most common risk factors (tobacco use, physical activity, stress, diet, blood pressure, lipids and blood glucose) and medications. The questions were answered by marking the patients' actual risk factor(s) and which risk factor(s) the physician discussed with the patient. The last four questions were answered by marking "Yes"/"No" or "Partly" and asked whether a relative was present during the discharge counselling, if any information was given about new symptoms and whether a motivational or person-centered approach was used. The answer to the question about a motivational or a person-centered approach was given as a "Yes" if a motivational or person-centered approach was clearly performed. The alternative "No" was used when no motivational

or person-centered approach was performed at all. If there was any motivational or person-centered approach performed during the counselling session, the alternative "Partly" was used.

A free-text field was available at the end of the observation form to list what kind of secondary prevention information the patient received and in what way it was delivered.

Data analysis

In the part of the study performed at the PCI unit the data were presented as the number of participants, the participants' profession, number of observations, if the patients were given any information and the reasons why the patients were not informed. The observer also noted what kind of information the physician or nurse presented to the patients as regards risk factors and lifestyle changes. These results were summarized and presented as numbers.

No results from the free-text fields were obtained.

For the observations at the CCU, the data were presented as the number of participants, the sex of the physicians, number of observations, risk factors, participation of relatives and the amount of information given regarding symptom management. In addition, the quantity of the information given with a motivational or person-centered approach was presented as numbers. The free-text field in this part of the study served as the qualitative data and have been analyzed using manifest qualitative content analysis [12]. Words and sentences containing secondary prevention management were identified and classified as meaning units, which were then condensed. The condensed meaning units were grouped to form subcategories and finally deployed to form main categories (Table 1). The final main categories were diagnosis/treatment, tobacco consumption, physical activity, stress, unhealthy diet and elevated lipids. These results described what kind of information the physicians gave as to secondary prevention strategies and appear as quotations in the results.

Ethics

The study protocol was approved by the Regional Medical Ethical Committee (Dnr 2016/127). The investigation conforms with the principles outlined in the Declaration of Helsinki [13]. All participants gave their informed consent before starting the observations.

Results

The total number of observations at the PCI unit was 50. The patients who received information at the PCI unit consisted of 10 women (out of 50) and the mean age was 65 years. In nine patients the information was distributed by physicians and in 19 patients by nurses. In 15 patients both physicians and nurses gave information and in seven patients information about respondents' profession was missing.

The most frequent information given was about tobacco consumption (smoking n=37, snuff n=12), followed by physical activity and diet. Few patients were informed about the risk of having high blood pressure, cholesterol and raised blood glucose at the PCI unit (Table 2).

If no information was given to the patients, the nurses and physicians listed the reasons, which were: The patient was too sick (1), No reason for not informing the patient (2), Discussion about coronary bypass grafting (1), Hearing defect (2) and No risk factors (1).

Table 1: Example of the categorization matrix according to Graneheim and Lundman [12].

Condensed Meaning Unit	Subcategory	Category
Don't exercise within the first 3-6 months	Don't exercise	Physical activity

Table 2: Information given about risk factors presented at the PCI unit. N=50.

Types of information	Number (%)	Information given by nurses	Information given by physicians	Information given by both nurses and physicians
Tobacco consumption	49 (98)	18	8	14
Physical activity	28 (56)	14	1	12
Stress	7 (14)	4	0	2
Unhealthy diet	19 (38)	9	1	6
High blood pressure	3 (6)	1	2	0
Raised lipid level	2 (4)	1	1	0
Raised B-glucose	0 (0)	0	0	0
Alcoholic use	1 (2)	1	0	0
Medications	5 (10)	0	1	4

Respondents' profession was missing in seven patients.

At the CCU, 31 observations during discharge were observed. A large part of the discharge counselling sessions contained information about the patients' diagnosis, the interventional procedure and medical treatment. In four patients the physician only informed the patients about medications. Several patients were informed about the most important risk factors, but some counselling sessions were extremely short. The shortest conversation between a physician and a patient was, "How do you feel? Do you know what happened? Questions?"

Another dialogue between patient and physician occurred as follows: Physician: "You have had a MI; an occlusion in one of the coronary arteries". Patient; "I'm healthy now". Physician; "Yes, you're still healthy".

All tobacco users received verbal information about the risks of tobacco consumption. Information about physical activity was given to 21 patients and 19 were informed about healthy diet (Table 3). This information was given regardless if the patient was physical inactive or had poor diet. However, in six patients out of the 21 who received information about the beneficial effects of physical activity, the only advice was to take it easy. One physician commented, "If you're out walking, take it a little bit easier, stop and rest. Take it easy in the beginning".

Another physician commented, "Don't exercise too much within the first 3-6 months".

In 25 of the 31 patients no relatives participated in the discharge counselling process. In 19 patients some information was given with respect to new symptom management. Most often the information was about when to take nitroglycerine, but not necessarily how to use it.

No motivational interviewing was observed at all in 18 patients, but in 11 patients a motivational approach was partly observed. In 14 patients no person-centered approach was performed at all, but in 16 patients a person-centered approach was partly observed.

Discussion

Patients that underwent PCI often received information about cardiovascular risk factors and lifestyle changes already at the PCI unit. The results also showed that the discharge counselling sessions varied in content and quality. In several patients, there were a one-way communication with no active patient participation, and most of the dialogues lacked motivational and person-centered approaches.

The early phase after symptom onset seems to be crucial to motivate patients to change lifestyle behaviors, and according to the European Guidelines [2], prevention strategies should be implemented before discharge.

In the current study several patients received information about secondary

Table 3: Information given about risk factors presented at discharge. N=31.

Risk factor	Patients' actual risk factor	Information given about risk factors
Tobacco consumption, n (%)	11 (35)	11 (35)
Physical activity, n (%)	10 (32)	21 (68)
Stress, n (%)	10 (32)	8 (26)
Unhealthy diet, n (%)	9 (29)	19 (61)
High blood pressure, n (%)	12 (39)	10 (32)
Raised lipid level, n (%)	18 (58)	15 (48)
Raised B-glucose, n (%)	5 (16)	3 (10)
Alcoholic use, n (%)	0 (0)	0 (0)

prevention strategies already at the PCI unit. One remarkable result was that the nurses at the PCI unit gave information more frequently than the physicians. This finding might in part be explained by the fact that nurses spend more time with the patients, probably are more interested in information giving and understand the beneficial effect.

The patients were informed about the importance of avoiding tobacco, no matter whether the patient was a smoker or not. The information to avoid tobacco is particularly essential to smokers, but is not needed for a non-smoking patient. To optimize the information health care providers need to decrease unnecessary information, and instead focus on the individual risk factors. To increase the chance for long-term behavioral change we also need to work more in collaboration with the patient [9].

In one study, aimed to investigate patients treated with PCI, with focus on secondary prevention [4], only 20% of the patients reported that they were not healthy. In our study one physician agreed with the patient's comment of being healthy. The information given to the patients should highlight that PCI treatment does not cure the disease, but that the patients had the opportunity to decrease certain risk factors by changing lifestyle. A correlation was previously found demonstrating that better knowledge about risk factors improves adherence to lifestyle changes and medication in patients with coronary heart disease [14].

The discharge counselling sessions mostly contained information about the disease, the PCI procedure and medications. However, several patients received information about the risk of having high blood pressure, raised cholesterol levels and raised blood glucose during the discharge counselling. This is in contrast to the little information given at the PCI unit. Whether the patients understand the correlation between the measured value and the higher risk of having a new cardiac event we did not know. It has previously been shown that patients rated information about lifestyle factors and symptom management as the most important determinants of health [15].

During the discharge counselling some physicians told patients, without any obvious contraindications to physical activity, to "take it easy" and "stop and rest" during outdoor walks. Growing evidence indicates that regular physical activity is one of the most important components of successful health promotion and disease prevention [16-19].

Patients with CAD have a rather low compliance to medications [20], a circumstance that might in part be explained by the patients' general lack of knowledge and motivation to take prescribed pharmaceutical treatments. All patients in our study received information about medication during the discharge counselling, but only a few were given of a motivational character.

To improve compliance with secondary prevention recommendations we suggest the patients' relatives be invited to the discharge counselling. Improved adherence to secondary prevention recommendations has been observed when both patients and

relatives receive information from health care providers [21]. In our study only eight relatives attended the counselling sessions.

Health care providers need to use strategies that include motivational interviewing and person-centered care. Previously, positive effects of individualized education with motivational and person-centered approaches have been reported [10,11,21]. A motivational approach support self-efficacy and promote belief in ability to change [22]. Also person-centered care improves patients' self-efficacy and this leads to better attendance in secondary prevention programs [23].

Method discussion

One advantage of the study was that at least one month passed between the delivery of the study information and start of the observations, which should decrease bias. Other advantages were that the observer at the PCI unit was an ordinary nurse and therefore gives no additional attention, and that only one person observed the discharge counselling sessions.

There are some limitations of the study. There were few observations recorded, and the participants came from only one hospital. Therefore, the results cannot be generalized.

A risk for bias could be linked to giving more rigorous information related to the participants' knowledge about the aim of the study.

Not all eligible patients were observed at the PCI unit. The missing observations were either related to the lack of a participating physician or nurse at the time of the PCI procedure or the staff had no extra time to commit to the investigation.

The attendance of an additional person during the discharge counselling increased the risk for bias. On the other hand, the presence of the researcher could possibly improve the overall content and quality of the discharge counselling process.

The observation forms were not tested for reliability and validity. The free-text field provided at the end of the observation form used at the PCI unit was seldom completed. Therefore, the planned qualitative analysis could not be conducted.

Conclusion

The study contributes to deeper knowledge and understanding of the reason why myocardial infarction patients do not change life style in a larger proportion than today, and why the compliance to secondary prevention strategies are relatively low.

Nearly all patients at the PCI unit received information about the importance to avoid tobacco, and more than half were informed about the beneficial effects of physical activity.

The discharge counselling sessions varied in content and quality. They also lack in motivational and person-centered approaches. However, all patients were informed about the importance to quit smoking (when needed) and more than half were told to be physical active.

Clinical implication

Health care providers need to focus on the patients most important risk factor(s) and the individual behavioral modifications. The information/education should be given in collaboration with the patient and in a motivational way as soon as possible after the acute event. Moreover, a homogenous message should be delivered both at the PCI unit and at the CCU.

An improved and homogenous patient education during hospitalization might result in better compliance to risk factor management and medications, and might lead to decreased morbidity and mortality.

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