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N.B.: When citing this work, cite the original article.

Original Publication:

Siw Carlford, Kjell Johansson, Preben Bendtsen, Per Nilsen and Agneta Andersson, Staff perspectives on the use of a computer-based concept for lifestyle intervention implemented in primary health care, 2010, HEALTH EDUCATION JOURNAL, (69), 3, 246-256.

<http://dx.doi.org/10.1177/0017896910364883>

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Postprint available at: Linköping University Electronic Press

<http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-59718>

Staff perspectives on the usage of a computer-based concept for lifestyle intervention implemented in primary health care

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Keywords: Computer-based; Lifestyle intervention; Primary health care; Staff

Word count: 2965

Abstract

Objective

The aim of this study was to evaluate staff experiences of the usage of a computer-based concept for lifestyle testing and tailored advice implemented in routine primary health care (PHC).

Design

The design of the study was a cross-sectional, retrospective survey.

Setting

The study population consisted of staff at nine PHC units in the county of Östergötland, Sweden.

Method

After a computer-based concept for lifestyle intervention had been in operation for 1 year, a questionnaire was distributed to all staff members. The questions concerned experiences of and attitudes to the concept, and comments on addressing lifestyle issues in PHC.

Results

Of the 291 potential respondents, 59% returned the questionnaire. Eighty-five percent found it positive to refer to the computer-based test, and 93% of those who had read the written advice generated by the computer, agreed with the advice provided. Seventy-five percent thought that the concept could have an effect on a patient's lifestyle, and 78% had confidence in the computer-based test. Staff at smaller PHC units had more positive attitudes ($p=0.003$) and referred a higher proportion of their patients to the computer-based test than

staff at larger units ($p=0.000$). Follow-up rates showed no significant differences between the categories.

Staff believed that inclusion of more lifestyle areas, e.g. smoking and dietary habits, would make the test more useful. More time, education and the establishment of lifestyle practices were issues suggested in order to enhance the focus on lifestyle factors.

Conclusion

Staff members have confidence in the computerized test and consider it a valuable tool. A development towards more lifestyle areas will make it even more useful.

Introduction

Research findings from different parts of the world have shown that a large number of health problems are related to lifestyle [1]. Hence, there is a need to address lifestyle behaviours, such as alcohol use, physical activity, tobacco and dietary habits, in routine health care. National and regional surveys in Sweden confirm that there is considerable concern among the population about lifestyle issues and indicate that many people have positive attitudes to receiving information and advice when they are in contact with health services [2,3]. However, health care providers often lack the time, knowledge, and skills to provide preventive services aimed at achieving health-related behaviour change [4,5].

Computer technology has been suggested as a means to integrate health behaviour change interventions into routine health care. There is a growing body of evidence supporting the effectiveness of computer-based screening and advice, both office-based and web-based, for various health-related behaviours [6–10]. Computer-based alcohol interventions have been favourably evaluated, with behaviour change outcomes often at the same level as traditional practitioner-delivered brief interventions [11]. Furthermore, provider feasibility, patient acceptability, and willingness to participate in computer-based interventions on alcohol and physical activity have been demonstrated in various settings, including emergency departments, primary care, and schools [12–17].

The aim of this study was to evaluate staff experiences of the usage of a computer-based concept for lifestyle testing and tailored advice implemented in routine PHC. A second aim was to explore staff attitudes to addressing lifestyle issues in PHC.

Methods

Setting

In Östergötland, Sweden, a county with approximately 420,000 inhabitants, the feasibility of a computer-based concept for lifestyle intervention in PHC was tested from 2006 to 2008. Nine of the 42 PHC units in the county participated in the study.

The number of GPs, nurses, and other staff members varied among the units, which were located in urban and rural areas. The size of the PHC units, measured by the number of listed patients aged 18 years or more, ranged from 4200 to 16,500 (average 9500) individuals. Staff numbers ranged from 14 to 60 (average 35), including GPs, nurses, assistant nurses, physiotherapists, welfare officers, dieticians, receptionists, and “others”.

The computer-based lifestyle intervention concept

The computer-based lifestyle intervention concept developed by the Lifestyle Intervention Research Group at Linköping University provides screening questions about alcohol and physical activity, using a touch-screen computer placed in a convenient place in the PHC unit. The reason why only two lifestyle areas were addressed in the test was an intention to evaluate the concept before developing a broader test. The two areas chosen have been shown to be difficult to address in PHC [4,18]. The concept was designed to be used in PHC settings in order to provide a tool for the staff when addressing lifestyle issues. Patients are referred by staff to perform the computer-based test, and those who complete the test receive written tailored advice generated by the computer. The test is performed anonymously, and the patients themselves decide whether to discuss the results with a health care provider. The concept and its implementation have been described previously in Carlford *et al.* [19].

Data collection and analysis

A questionnaire was distributed by e-mail to all staff members at the nine participating PHC units in November 2007, after the computer-based concept had been in operation for 1 year. The questionnaire was developed and distributed using the tool, Piblech® Survey 5.6. It consisted of two fixed response questions about the unit and the respondent's profession, seven fixed response questions about how the respondent had used the computer-based concept, 14 statements about the concept with four response alternatives (agree to disagree) on a Likert scale, and two open-ended questions concerning suggestions about how the concept could be developed and how the respondent would like to address lifestyle issues in routine practice.

Analyses of differences between groups were performed using the Kruskal–Wallis test. Correlations were analyzed using Spearman's correlation coefficient. Statistical significance was defined as a p -value ≤ 0.05 . Statistical analyses were performed using the computer-based analysis program Statistical Package for the Social Sciences (SPSS) version 16.0.

Responses to the open-ended questions were analysed using the qualitative content analysis, in order to extract the manifest content [20]. First, the meaning units identified in the statements were analysed and labelled with appropriate codes. The codes, sorted into distinct categories, with each code appearing only in one category, are illustrated in the Results section.

Results

A total of 311 questionnaires were distributed. Ten individuals stated that they no longer worked in a position where the questionnaire was relevant and 10 individuals were on sick leave when the questionnaire was distributed, leaving 291 potential respondents. Of the 286

questionnaires returned, 114 lacked information and 172 contained complete or partial responses. Thus, the response rate was 59%. Of those who answered the questionnaire, 17.4% were GPs, 41.9% nurses, 11.6% assistant nurses, and 29.1% belonged to other staff groups.

Activities associated with the computer-based concept

The question about how often they referred patients to the test was answered by 164 staff members. Sixty-six of those stated they had not referred anyone to the test, with 19 explaining that they did not consider this to be their duty; as the PHC units were allowed to select which staff categories should refer patients to the test, this was interpreted to mean a staff member who was not supposed to refer patients. Those who stated “it is not in my duty” were excluded from the analysis, leaving 145 answers in the analyses. Among the remaining 47 staff members (32%) who stated that they had never referred anyone to the test, 19 individuals (41%) attributed this to forgetting, 5 (11%) said that it was not compatible with their routines, 2 (4%) stated that it was due to lack of time for preventive services, and 21 staff members (45%) did not provide an explanation for the lack of referrals. Of the 98 staff members who stated they did refer patients to the test, 55% did so once a month, 37% once a week, and 8% every day. Of 70 individuals who had had the opportunity to follow up the test results at the next consultation, 40 staff members (57%) stated they sometimes did so and 3 staff members (4%) said that they often followed up test results. Twenty-seven (39%) respondents stated they never followed up the test results with patients. No significant differences between staff categories were found concerning referral rates or follow-up rates.

The nine PHC units were divided into three categories based on the number of patients aged ≥ 18 years listed at the unit: small units with less than 7000 (3 units), medium units with 7000–12,000 (4 units), and large units with more than 12,000 (2 units). Staff members at the

large units referred patients to the computer-based test less frequently than staff at the small or medium-sized units ($p=0.000$). Follow-up rates showed no significant differences between the categories.

Table I presents the results pertaining to staff perceptions of the implementation of the computer-based test and how the test influenced their work with lifestyle issues, according to staff category and size of the unit. GPs and nurses felt the use of the test was accepted in the staff group to a higher, although not significant, degree than other staff categories ($p=0.052$). There were no significant differences between GPs and nurses and other staff categories for the remaining items. There were significant differences according to unit size between the groups regarding all five statements, with staff at small-sized units agreeing to a higher degree than those at large- or medium-sized units.

Attitudes to the computer-based concept

Four of the statements in the questionnaire concerned the staff members' attitudes to various aspects of the test (Table II). The statement "I agree with the content of the advice provided by the computer" was answered by 120 individuals. Of the 105 staff members who reported having read the advice, 93% fully or partly agreed and 7% partly disagreed (no differences according to staff category). Fifteen stated that they had not read the advice. Among GPs and nurses, 4% and 7%, respectively, had not read the advice; in the other staff groups, 26% stated they had not read the advice. The difference between GPs and nurses and other staff categories was significant ($p=0.002$). Eighty-five percent of the staff members agreed with the statement "I find it positive to refer patients to perform the test", 75% agreed with "My opinion is that the computer-based concept could have an effect on patients' lifestyle" and 78% agreed with "I have confidence in the computer-based test". There were no

Table I. Perceptions of the implementation of the computer-based test, and how the test has influenced work with lifestyle issues according to staff category and size of the unit^a

	<i>n</i>	<i>p</i>	Level of agreement (%)			
			Agree	Partly agree	Partly disagree	Disagree
I feel I have been involved in the process of introducing the computer-based test at this PHC unit						
Staff category		ns				
GPs	25		28	40	12	20
Nurses	57		20	28	33	19
Others	38		26	16	21	37
All groups	120		23	27	25	25
Size of unit		0.000				
Large	35		23	20	31	26
Medium	47		17	30	43	11
Small	36		47	39	14	0
To use the computer-based test is well accepted in the staff group						
Staff category		ns				
GPs	25		15	56	28	0
Nurses	57		21	58	21	0
Others	37		19	46	16	19
All groups	119		19	54	21	6
Size of unit		0.000				
Large	34		15	41	23	21
Medium	46		11	59	30	0
Small	36		36	58	6	0
We discuss the computer-based test in the staff group						
Staff category		ns				
GPs	25		24	36	28	12
Nurses	58		24	36	31	9
Others	38		37	18	30	16
All groups	121		28	31	30	12
Size of unit		0.000				
Large	35		23	20	31	26
Medium	47		17	30	43	11
Small	36		47	39	14	0
Due to the computer-based test more patients also receive verbal advice about alcohol or physical activity						
Staff category		ns				
GPs	25		16	44	28	12
Nurses	56		9	59	25	7
Others	38		18	50	13	18
All groups	119		13	53	22	12
Size of unit		0.000				
Large	33		9	30	30	30
Medium	48		8	62	28	2
Small	36		25	58	8	8
It has become easier to address lifestyle issues in patient contacts since the computer-based test was introduced						
Staff category		ns				
GPs	25		12	32	24	32
Nurses	56		11	57	23	9
Others	38		21	42	18	18
All groups	119		14	47	22	17
Size of unit		0.002				
Large	33		15	41	23	21
Medium	47		11	59	30	0
Small	36		25	53	14	8

^aSize: large, >12,000 listed patients aged ≥18 years (2 units); medium, 7000–12,000 listed patients aged ≥18 years (4 units); small, <7000 listed patients aged ≥18 years (3 units).

Table II. Attitudes to the computer-based concept according to staff category and size of the unit^a

Statement	n	p	Level of agreement (%)			
			Agree	Partly agree	Partly disagree	Disagree
I find it positive to refer patients to perform the test						
Staff category		ns				
GPs	25		24	52	24	0
Nurses	56		36	52	11	2
Others	39		41	46	3	10
All groups	120		35	50	11	4
Size of unit		0.003				
Large	33		27	42	18	12
Medium	48		25	62	10	2
Small	36		56	39	6	0
I agree with the advice provided by the computer^b						
Staff category		ns				
GPs	24		42	50	8	0
Nurses	53		41	50	9	0
Others	28		43	57	0	0
All groups	105		42	51	7	0
Size of unit		ns				
Large	25		48	48	4	0
Medium	42		33	55	12	0
Small	35		49	49	3	0
My opinion is that the computer-based concept could have an effect on patients lifestyle						
Staff category		ns				
GPs	25		16	52	28	4
Nurses	57		9	68	21	2
Others	36		17	58	11	14
All groups	118		13	62	19	6
Size of unit		0.002				
Large	33		9	54	21	15
Medium	46		6	61	28	4
Small	36		25	67	8	0
I have confidence in the computer-based test						
Staff category		ns				
GPs	25		16	56	20	8
Nurses	56		20	59	16	5
Others	37		24	57	11	8
All groups	118		20	58	15	7
Size of unit		0.005				
Large	32		25	44	19	12
Medium	47		4	70	17	8
Small	36		36	53	11	0

^aSize: large, >12,000 listed patients aged ≥ 18 years (2 units); medium, 7000–12,000 listed patients aged ≥ 18 years (4 units); small, <7000 listed patients aged ≥ 18 years (3 units).

^bIncludes only respondents who stated they had read the advice.

differences between staff categories concerning the responses to these three statements. Staff at the small-sized units agreed to a higher degree than staff at large- or medium-sized units to all statements except “I agree with the advice provided by the computer”.

Frequency of referral to the test was found to be weakly correlated to a positive attitude to referral ($r=0.317$, $p=0.01$) and to involvement in the implementation process ($r=0.365$, $p=0.01$). There was a strong positive correlation between confidence in the test and finding it positive to refer patients to the test ($r=0.683$, $p=0.01$). Confidence in the test, however, was not correlated to frequency of referral.

Staff suggestions concerning the development of the computer-based concept

An open-ended question about development of the concept resulted in a variety of suggestions among the 72 answers. Four categories were identified in the content analysis: (1) the test itself; (2) information about the concept; (3) routines; and (4) placement of the computer.

Most comments concerned the test itself, with “other lifestyle areas” and “the written advice” emerging as two sub-categories that were addressed by several respondents. The staff suggested that questions should also be included on other lifestyle areas: “*I am waiting for a development concerning other lifestyle habits...*”. Tobacco, diet, and stress were other areas suggested for inclusion in the computer-based test.

Some respondents suggested that the advice could be “tougher” and more informative, but there were also comments that the advice was good as it was. Suggestions were made that patients should be routinely referred to the test: “*...a routine that all patients who have a GP appointment should be told to perform the test*”, and that the computer must be placed so that it is easily accessible for all patients and visible for staff members so that they are reminded to refer patients.

Staff suggestions concerning addressing lifestyle factors in PHC

The other open-ended question concerned suggestions on how lifestyle issues in general can be addressed in PHC. Three categories were identified among the 92 answers: (1) making it a natural part of the consultation; (2) tools and activities; and (3) resources required.

Addressing lifestyle factors appeared to be a natural part of the work at many of the PHC units, but there was an awareness that lifestyle issues could be discussed with greater frequency by all staff groups, “...we should have a much more preventive approach in all lifestyle areas”.

Separate lifestyle practices or teams were proposed, as were tools like assessment forms for use by all staff members: “...we are working on the establishment of some kind of lifestyle practice”. Respondents also mentioned group activities for patients to support lifestyle change, and regular health check-ups for patients at specific ages: “Groups with a supportive and educational approach”.

Education and time were mentioned as important resources required to support lifestyle changes in patients, “...more common education, so that everyone provides, more or less, the same advice”; “If there was more time I would like to work much more with this”.

Discussion

This study was conducted in order to evaluate staff experiences of the usage of a computer-based concept for lifestyle testing and tailored advice implemented in routine PHC. We found that the vast majority of the staff were positive to referring patients to the test, had confidence in the concept, and believed that it has the potential to help patients modify their lifestyle. However, despite favourable attitudes a relatively low proportion of the staff actually referred

their patients to the test and very few used the opportunity to follow up on the test results. Staff members at smaller PHC units generally were more positive to the concept than staff at larger units and used the computer-based test more frequently. Data obtained in the former study revealed that the three smallest units had the highest referral activity, and the largest unit had the lowest referral activity [19]. One possible explanation for this is that staff in the smaller units felt more involved in the decision to adopt the new working tool. Grol *et al.* [21] have suggested that involvement of the group who are intended to apply an innovation helps the target group to consider the innovation as their own and encourages them to take responsibility for it. Almost one-third of the staff members never referred patients to the test, and those who did refer did not do this very often, with less than one-tenth of the staff referring a patient to the test on a daily basis. Research in many disciplines has shown that modification of attitudes and behavioural intentions in order to change behaviour is generally a long-term process. Models like Protection Motivation Theory [22], and Theory of Planned Behavior [23], view intentions as the key predictor of behavioural enactment. However, empirical research suggests that about 50–60% of the variance in behaviour is unexplained [24,25], indicating a substantial “intention–behaviour gap” as shown in our study. Research suggests that the use of intention as a predictor of behaviour declines as habit strength increases [26,27]. It seems plausible that 1 year is far too short a time to change well-established routines in a PHC setting.

Interestingly, a barrier that is often cited for the lack of work by health care providers on prevention and lifestyle issues, i.e. lack of time [5], did not seem to be an important reason for the limited patient referrals in our study. It required very little time to ask a patient to perform the test on the way home, but staff tended to forget to refer patients. This suggests that their current behaviour is habitual and enacted without much purposeful thinking or reflection. It

has been increasingly recognized that the automatic nature of habit presents a considerable challenge to efforts to change many behaviours and routines [28].

Of those who did refer patients to the test, and also had the opportunity to follow up the results at the next consultation, a majority very seldom did so. To ask for the test results and offer support to patients who need to change their habits could be a way to support behavioural change. However, this might be perceived as a more time consuming act than only referring people to the test. It is also possible that the health care providers do not know how to handle such a situation and what advice to provide.

The overall results concerning attitudes, experiences, and usage associated with the concept were similar among the staff categories. It might have been expected that GPs and nurses, who are trained to discuss lifestyle issues with their patients, would have used the test to a higher degree than other staff groups, but this was not the case. However, there were considerable differences when comparing the size of the participating PHC units. Smaller units generally reported more positive attitudes to and higher usage of the computer-based concept. A previous study has shown that the three smallest units also had the highest proportion of referred patients [19]. Staff at the smaller units reported the highest frequency of patient referrals, expressed generally favourable attitudes to referral, felt involved in the implementation process to a large degree, and stated that the use of the computer-based concept was well accepted among the staff group. Involvement has been shown to be a fundamental factor in organization development [29], and the importance of staff involvement in health care in the UK has gained considerable attention in the last decade [30]. On the other hand, a study among physicians conducted by Carpiano *et al.* showed that teamwork (office organization) and tenacity (prevention delivery attitudes) were more strongly associated with preventive service delivery than involvement or tools [31].

It is somewhat remarkable that the results in terms of staff attitudes to and usage of the concept varied to such an extent among the participating PHC units considering that the concept and implementation activities were similar at all units. Apparently, it was easier to successfully implement the computer-based concept at smaller PHC units than at larger units. Previous studies in health care settings have shown that size is positively correlated to adoption of innovation [32-34]. However, to the best of our knowledge, no study has specifically examined the importance of unit size with regard to the PHC setting. As confirmed by previous research, a number of other organizational factors influence the implementation process [35], and there is a need for further research in this area.

The PHC staff requested routines for addressing lifestyle issues and they expressed a desire for the establishment of a more preventive approach in primary health care. This could be done using lifestyle practices as a part of routine care, and some of the units already have or are planning those types of practices. Since the attitudes to the computer-based concept were very positive, the test could be one integrated component in a concerted strategy to improve work with lifestyle issues in primary health care in the future [36]. There is a need for further development of the test, and further research on implementation of computer-based lifestyle interventions in primary health care is also necessary.

Study limitations

One limitation of this study is the low response rate obtained. The fact that no validated assessment form was used may also be considered a weakness, but it was important to tailor the questions to capture relevant aspects of the specific computer-based concept.

Conclusions

Staff at the PHC units were generally positive to the computer-based test, with staff at smaller PHC units demonstrating more positive attitudes and referring a higher proportion of their patients to the computer-based test than staff at larger units. After using the computer-based test for 1 year routines to refer patients to the test were not yet established, and only a few staff members used the opportunity to follow up on the test results at a subsequent patient consultation. Staff believed that inclusion of more lifestyle areas, e.g. tobacco and diet, would make the test more useful.

Funding

This work was supported by the County Council of Östergötland, Sweden.

Acknowledgements

The authors are grateful to Mrs. Marika Holmqvist for statistical support.

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