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Characteristics of child health care practitioners in overweight prevention of children

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ABSTRACT

Objectives: To identify behavioral and personal characteristics of child health care (CHC) practitioners that influences the effect of early overweight prevention in children.
Methods: In total 216 questionnaires were filled out by CHC practitioners from four organizations in the Netherlands.
Results: There is a gap between awareness of the problem overweight in early childhood and actually discussing this with parents, as well as a gap between the existing recommendations and the perceived importance of early overweight prevention. Despite the fact that nurses have a more central task in life-style support than physicians, they reported to have less knowledge and skills than physicians.
Conclusions: While both CHC physicians and nurses need support in improving their knowledge and skills, it is the nurses who need more support. A more structured and tailored implementation strategy with more emphasis on the needs of the nurses and physicians may improve early overweight management.

1. Introduction

Overweight in children is recognized as a major public health problem (WHO, 2000). In the Netherlands, the prevalence of overweight in children almost tripled between 1980 and 2010, and currently 14% of all children are overweight (Schönbeck & Buuren, 2010). The problem of overweight in childhood is that an overweight child is prone to become an overweight adult (Reilly & Kelly, 2011). Overweight is associated with a higher risk of chronic diseases such as cardiovascular disorders or psycho-social problems (L'Allemand-Jander, 2010; Freedman, Khan, Dietz, Srinivasan, & Berenson, 2001). The challenge is to start overweight prevention in childhood, but existing intervention programs have shown disappointing results as regards long-term effects (Haynos & O' Donohue, 2012). The programs mostly focus on older children and often fail to support young children from becoming overweight. It is especially for these younger children that the parents are important role models, as they lay the foundations for a healthy lifestyle for their child (Scaglioni, Arriza, Vecchi, & Tedeschi, 2011). Food preferences and habits established in childhood tend to be maintained in adulthood. In addition, several studies suggest that parents are indeed capable of changing their children's behavior and lifestyle in a healthy direction (Boere-Boonekamp et al., 2008). Hence, prevention of overweight among children should start as early as possible, and parents must be involved in this process.

In the Netherlands, physicians and nurses working for the child health care (CHC) organization are the main professionals delivering preventive care to children. Each CHC service is facilitated and financed by the local government. It monitors the growth and development of almost every child by means of a nation-wide program of examinations administered at predetermined ages. The CHC practitioner knows the medical and family history and the current living conditions of both family and child. The fact that over 95% of Dutch children between 0 and 19 years of age participate in the CHC program means that the CHC practitioners can play an essential role in detecting infants at risk for overweight and in motivating parents regarding the development of a healthy behavior lifestyle for their child (Dunnink & Lijs-Spek, 2008).

However, both the relevant literature and practical experience suggest that the overweight prevention protocols that the CHC has developed so far are not effectively administered (Fleuren & De Jong, 2006). There are various factors, 'determinants' or 'characteristics', that can create a gap between the process of developing preventive programs and their actual use (Fleuren, Wiefferink, & Paulussen, 2004). According to the literature, behavioral characteristics of CHC practitioners have the most direct influence on this process, but limited information is available to show which

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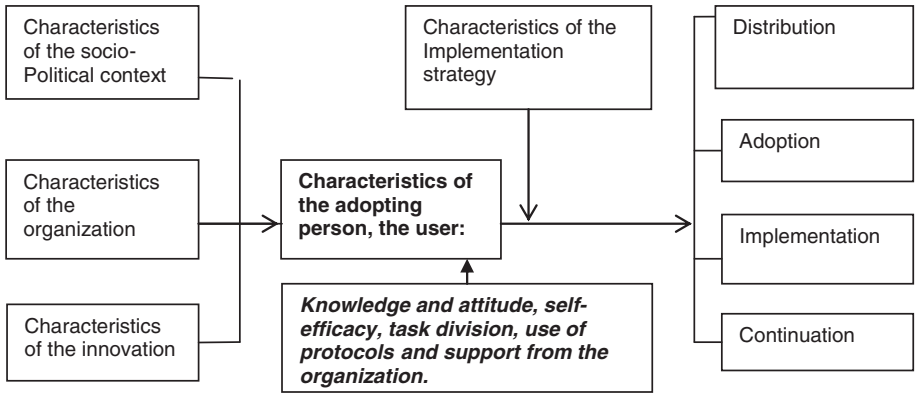

Fig. 1. Model determinants of innovation processes (Fleuren et al., 2004; Paulussen et al., 2007).

characteristics of CHC practitioners are important (Cheater et al., 2005; Paulussen, Wiefferink, & Mesters, 2007). For our theoretical perspective the model of Fleuren et al. (2004) is combined with the developed model by Paulussen et al. (2007) (Fig. 1). This model is also used, because of its focus on the characteristics of the CHC practitioners. Paulussen's model distinguishes five main themes in the process of behavior change: knowledge and attitude, self-efficacy, task division, willingness to use and actual use of protocols and related educational materials, and support from the organization. In addition, we used the ASE (attitude, social norms and influence and self-efficacy) model (De Vries & Mudde, 1998) to further explain the behavior of the CHC practitioner.

The aim of the present study was to identify particularly the practitioner-related behavioral and personal characteristics that influence overweight prevention management. Specifically, the study addressed on the following two research questions and four sub-questions:

1. What are the behavioral characteristics relating to CHC practitioners and their organization that influence the performance regarding overweight prevention management in daily practice?
   a. To what extent are CHC practitioners aware of the importance of early overweight prevention?
   b. What factors determine whether and how they discuss overweight with parents?
   c. What characteristics affect a systematic approach to and the application of the overweight protocol?
   d. Does organizational support affect the CHC practitioners' performance regarding overweight prevention?
2. To what extent do personal characteristics of CHC practitioners (profession, working in an area with low or high socio-economic status [SES], work experience, age, the practitioner's own body mass index [BMI] and organizational aspects) affect the issues of awareness, discussing overweight, systematic approach and implementing the protocol?

2. Methods

A quantitative study was conducted among practitioners from four CHC organizations: three organizations in the southern part of the Netherlands and one organization covering the central and northern parts of the country. The catchment area of the northern organization is divided into six different regions. All CHC practitioners (both physicians and nurses) work with children in the age category from birth until 4 years old.

From a total of 320 CHC practitioners from these four organizations 232 CHC practitioners participated in this study. All 105 CHC practitioners from the southern organizations were included, while a random sample of 127 CHC practitioners from the organizations in the center and north of the Netherlands were included.

Data collection took place in the period from February to April 2009. The participating practitioners completed a questionnaire during a meeting within their organization. Practitioners who were not present at this meeting were invited to complete the questionnaire afterwards, and return it by e-mail or post.

2.1. Questionnaire

A self-report questionnaire was developed for this study, based on the literature and results of in-depth interviews with CHC practitioners (De Vries & Mudde, 1998; Dera- De Bie, Jansen, & Gerver, 2012; Harmsen, Peters, & Wensing, 2005; Paulussen et al., 2007).

The questionnaire consisted of 105 items divided into five main categories: (1) awareness of the importance of prevention; (2) discussing overweight with parents; (3) adherence to a systematic approach to implement the overweight protocol; (4) supportive factors within the organization and (5) personal characteristics. The first four of these main categories give an answer to the first research question, while the final category gives an answer to the second research question. The first four main categories used a 5-point Likert scale, with options ranging from 'strongly disagree' (code 1) to 'strongly agree' (code 5) and from 'absolutely unimportant' (code 1) to 'very important' (code 5). Item response indicated that the questionnaire had a good fit, with Cronbach's alpha 0.88. The questionnaire was pilot-tested by 9 experts in the field of CHC or experts on overweight, and was designed to be completed in 20 minutes.

2.2. Data analysis

The questionnaire was inspected for completeness, and incorrect data input was checked on a random sample of 10 questionnaires ($n = 10$, incorrect input $< 1\%$). Data were analyzed using SPSS (Statistical Package for the Social Sciences) version 19.0 (Field, 2009). The first four main categories of the questionnaire were analyzed descriptively (mean), and items were clustered into the main categories (Table 1), with the scores 1 and 2 and 4 and 5 of the 5-point Likert scale collapsed. We used this division in scores instead of the mean and standard deviation to make the differences in extreme scores more visible. This descriptive analysis was used to answer the first research question. In order to answer the second research question two different statistical tests were used to identify relations with the first four main categories. First, a Mann–Whitney test for two independent samples was used to assess whether there was a difference between the first four main categories of the questionnaire and the types of profession (e.g. physician or nurse) and practitioners working in a low- or high-SES area. Also, a Mann–Whitney test was used to check if there were differences between the CHC organizations in the southern part of the Netherlands and the organizations that cover the central and northern part of the country.

Finally, Spearman's Rho was calculated to see if there was a correlation between the first four main categories and the personal characteristics of the CHC practitioners (working experience, age and the practitioner's own BMI).

Table 1
Results related to awareness, skills, protocol use and organizational support.

Main category	Questionnaire items	Mean	Scores 1 + 2 in %*	Scores 4 + 5 in %*
1. Awareness of the importance of prevention	Importance of advice during a child's first year	3.53	10.6	53.2
	Importance of advice after the child's first year	4.35	2.4	90.3
	Importance of advice about additional nutrition during the child's first year	4.37	1.9	91.2
	Importance of advice about physical exercise during the child's first year	3.67	10.6	56.9
	Learning about healthy nutrition already starts during the child's first year	4.72	2.8	97.2
	The risk of overweight starts after the child's first year	4.02	12.5	75
	I am familiar with my organization's overweight protocol	3.42	25.8	61.5
	I do not know enough to work with this protocol	3.31	26.8	45.3
	I know the protocol well enough to work in accordance with it	3.24	26.1	43
2. Discussing overweight with parents	I find it difficult to discuss overweight:			
	With low-SES clients	3.17	34.1	35.7
	When parents are overweight	3.05	38.7	43.1
	When parents are not motivated	1.97	77.4	9.2
	When encountering resistance	2.13	70.8	9.7
	When I feel under pressure of time during the consultation	2.85	44.4	32.4
	I have enough skills to discuss the topic with parents	3.89	25.9	74.1
	Keeping up parents' motivation	3.35	11.1	40.3
	I think that my recommendations are effective as regards:			
	breastfeeding	3.88	0.5	75
	formula feeding	3.81	1.4	73.1
	additional feeding	3.71	2.3	64.9
	physical activity	3.31	7.9	36.1
3. Systematic approach (applying overweight protocol)	I always record the findings of the consultation	4.00	8.3	75.1
	At the next consultation I follow up on the previous consultation	4.05	7.8	75.5
	I think recording nutrition data is important	4.22	4.2	83.8
	I am familiar with the guideline on breastfeeding	4.41	0.5	93.6
	I am familiar with the overweight protocol	2.50	54.2	27.3
	I am familiar with the early detection protocol	3.24	30.1	47.7
	I use the diagram for detecting overweight below the age of 2 years	2.07	63.4	11.6
	I use the diagram for detecting overweight above the age of 2 years	2.90	38.3	36.9
	I use the brochures of the national nutrition center	3.62	21.5	63.6
	Use of the overweight protocol:			
	I lack certain specific skills to apply it	3.28	26.1	46.6
	The protocol is useful in practice	3.28	17.9	37
	I have been working according to the protocol for more than 6 months	2.89	36.6	29.2
	Working according to the protocol takes more consultation time	2.25	64.2	13.3
	It is clear to me how the protocol was developed	3.01	32.7	31.5
	I had enough influence on the development of the protocol	1.94	74.4	8.5
4. Supportive factors within the organization	The management supports me in familiarizing myself with the protocol	3.21	22.4	38.2
	The management stimulates the use of this protocol	3.18	30.3	41.2
	The management annually reminds me of the protocol	2.21	66.5	13.6
	The protocol has been adjusted after evaluation	2.48	49	14.2

* The score of the Likert scale ranges from 1 to 5, the relative score 1 and 2 represent (absolutely) unimportant/(strongly) disagree and the scores 4 and 5 represent (very) important/(strongly) agree. The scores 1 and 2 and 4 and 5 are collapsed, and the response items are presented in percentages.

3. Results

3.1. Respondents

Table 2: in total, 216 of the 232 questionnaires were completed, which is an average response rate of 93%. The respondents included sixty-nine physicians and 147 nurses of whom 213 women and 3 men. Traditionally, Dutch CHC practitioners working with children aged 0–4 years are nearly all females. The average age of the respondents was 46 years, and their average number of working years was 14. Reasons for non-completion were sick-leave, holidays or pregnancy leaves.

3.2. Behavioral characteristics influencing overweight management in daily practice

Table 1 summarizes the main results of the descriptive analyses, based on the first four main categories of the questionnaire. Only the most remarkable items with a cutoff point of 60% or less, are described. In this table the mean of the scores of the Likert scale is presented. The total score of the Likert scale was stated as 100%. Thereafter, the sum of the scales 1 and 2 as well as the sum of the scales 4 and 5, was expressed as percentage of this 100% score. One remarkable finding is the difference between the awareness of the importance of overweight prevention. This awareness is less in children younger than 1 year (53.2%) compared to children over the age of 1 year (90.3%). The question on the importance of healthy feeding practices scores very high (91, 2%). By contrast, the score for the importance of physical activity in a child's first year was 56.9%. The scores regarding enough knowledge about the overweight protocol scores 45, 3% and 43%.

Table 2
Profile of participants.

Area	Northern/Central part of the Netherlands*						Southern part		
Organization/Region	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3
n	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3
Total response	26	26	15	19	16	15	30	42	27
Response %	96	100	75	95	84	100	100	91	93
Physician	10	5	6	5	5	5	9	16	8
Nurse	16	21	9	14	11	10	21	26	19
Average age	44	51	44	46	43	49	48	44	47
Female/Male sex	26/0	26/0	15/0	19/0	16/0	15/0	28/2	41/1	27/0
Average no. working years	13	20	12	15	11	16	13	13	15
Average weekly working hours	19	21	18	21	22	19	20	21	23
Average BMI	23	24	23	23	23	24	24	24	24

* Four CHC organizations participated; the catchment area of the northern organization is divided into 6 regions (1.1–1.6), and the southern part is divided into 3 regions (2.1–2.3).

Table 3
Results related to the second research question.

Main category or item: Type of profession	Mean rank score *		p**
	Physician	Nurse	
Awareness of the protocol	98.81	73.58	0.001
Systematic approach (applying overweight protocol)	93.75	72.31	0.005
Nurses less skilled in working with protocol	96.90	75.26	0.004
Main category or item: SES	**Mean rank score***		**p***
	Low SES	High SES	
Importance of prevention of overweight in the child's first year	44.49	46.23	0.757
Importance of prevention of overweight after the first year of the child	43.56	48.48	0.360
I think that my recommendations about additional nutrition are effective	42.16	51.88	0.072
I think that my recommendations regarding physical exercise are effective	40.85	55.06	0.008
I use the materials (brochures) from the national nutrition center	45.24	42.73	0.661
The guideline is useful in practice	30.33	39.47	0.058
I have worked with the overweight protocol for over 6 months	29.84	40.66	0.029
Correlations between first four main categories (Spearman's Rho)		**r**	**p**
Working experience			
Awareness of protocols		−.017	0.414
Systematic work approach		−.028	0.36
Support from the organization		−.157	0.028
Age			
Age was associated with awareness scores		−.113	0.054
Perceived support from the organization		−.051	0.275
Main category or item: differences between organizations	**Mean rank score***		**p****
	South	Central/North[1]	
Awareness related to prevention of overweight	120.45	95.96	.004
Use of relevant materials	143.08	75.63	.000

* Mean rank: a higher mean rank means a more positive score.
** If Z score is higher than 1. It is significant; $p < .05$.

Table 1 shows also that the items related to difficulty to discuss the topic of overweight scores overall less than 43.1%. Especially discussing overweight with unmotivated parents scores low: 9.2%. Also the experience of encountered resistance from the parent's scores just 9.7%. The item related to the effective recommendation of physical activity scores 36.1%.

Furthermore, the category systematic approach shows for the items "familiar with the overweight protocol" and "early detecting an overweight child", a score of respectively 27.3% and 47.7%. The use of diagrams to detect overweight in children scores 36.9% while the use of an overweight protocol scores less than 46.6%. Of the responders, 13.3% mentioned that it takes more consultation time. Besides 8.5% reports that they had no influence on the development of the protocol. The overall score for support from the organization was 41.2% or less. Especially, the organization fails in reminding the overweight protocol (13.6%). Adjustment of the protocol after evaluation scores 14.2%.

3.3. Personal characteristics influencing overweight management in daily practice

In Table 3 the main results of the second research question, the influence of personal characteristics related to early overweight management, are summarized. There was a significant difference between the physicians and nurses as regards the main category of awareness of the protocol ($p = 0.001$). The physicians were more familiar with the protocol and possessed more knowledge that is required to apply it. In addition, the nurses reported that they had less skills to work with the protocol compared to the physicians ($p = 0.004$). There was also a significant difference in using a systematic approach. The physicians seemed to use a more systematic approach than the nurses ($p = 0.005$).

Overall, there was no difference found between practitioners working in a low-SES area and those working in a high-SES. Nevertheless, the CHC practitioners working in a low-SES area had significant lower scores on the effect of their recommendations regarding physical activity in the child's first year ($p = 0.008$). Moreover, practitioners working in high-SES area scored significantly higher when it comes to use the overweight protocol for over 6 months in daily practice ($p = .0029$). A close significant result was found regarding the issue that practitioners working in a low-SES area were less likely to answer that the overweight prevention protocol is useful in daily practice ($p = 0.058$).

There was a close positive relation between encountering resistance when discussing the topic of overweight and working experience. The older the practitioner, the more one was aware of overweight prevention during the first year of life ($p = 0.054$). Yet, the age of the practitioner was not correlated with perceived support from the organization. Furthermore, a correlation was found between years of working experience and the category support from the organization ($p = 0.028$). The years of working experience and the category's' awareness of protocols and a systematic working approach are not correlated. Also, there was no correlation between the practitioners' own BMI and awareness, discussion skills and systematic working approach.

3.4. Organization

As regards to the main category "differences between organizations", the organizations in the southern part of the Netherlands score higher on awareness and use of relevant materials compared to the organizations in central and northern part of the country ($p = .004$ resp. $p = .000$).

4. Discussion

A questionnaire was used to investigate which behavioral and personal characteristics of the CHC physician and nurse influence overweight prevention in daily CHC practice.

The main results indicate that there is insufficient knowledge by CHC practitioners regarding the overweight protocol, and skills are lacking about discussing the (risk) of overweight with parents of their child. Moreover, the CHC nurses seemed to be less likely to apply the overweight protocol than the CHC physicians. Perhaps physicians and nurses focus on different aspects of a protocol, which could be explained by their different tasks, their professional culture regarding refresher courses or their different learning styles (Goossens, Patrick, Bossuyt, & De Haan, 2008). Overall the gap in knowledge and skills can hamper the application of protocols in practice.

Striking is the fact that the practitioners' attitude towards the implementation of the prevention measures and the intention to make use of the protocols were positive. Generally speaking, the underlying problem may be one of insufficient attention to protocol implementation, especially regarding the continuation. This is in agreement with the results of the study by Fleuren and De Jong (2006), who found a nationwide lack of implementation culture within the Dutch CHC, despite the fact that there is a growing attention since 2006 from the national CHC to the regional ones in supporting protocol implementation. The protocol implementation structure plan has been developed at national level (Dunnink & NCJ, 2013). Yet, specific information on local issues is important for the development and implementation of a childhood overweight management action plan (Brink-Melis et al., 2012).

The CHC practitioners we surveyed agreed with the importance of overweight prevention, but their focus was clearly less on the children's first year. Although the scores they gave for the importance of healthy nutrition were high, it seemed that the practitioners did not relate this to the importance of early overweight prevention. They also underestimated the importance of physical activity, especially in the child's first year (Kohl et al., 2012).

Furthermore, discussing the issue of overweight with parents is experienced as difficult with unmotivated parents and parents who show resistance. It might therefore be useful to train practitioners in risk communication and motivational interviewing techniques (Schwartz et al., 2007). This is a method to encourage unmotivated parents to make healthy choices regarding their lifestyle and therefore also that of their children.

This is in line with the model by Paulussen, which shows that characteristics of the users play a key part in effective behavioral change interventions (Paulussen et al., 2007). Especially knowledge, which influences the attitude, can be improved. Also, this can be explained from the ASE model, by assuming that a more positive attitude of all parents to prevent overweight for their child can be improved and this influences directly also the intention of parents to go for a healthy life style (De Vries & Mudde, 1998).

Overall, organizational support was often reported to be lacking. Yet, it is likely that CHC practitioners' more working experience is more familiar with the overweight protocol and has more routine experience. However, more support from the organization for the implementation of early prevention measures may improve prevention (i.e. protocol application) in routine CHC practice. Constraints such as lack of time and training (for knowledge and skills) impede the implementation. These barriers have also been identified in previous research (Story et al., 2002).

The results of this study also suggest that CHC practitioners who are working in low-SES areas are less likely to apply the overweight protocol, possibly because low-income families are less health-conscious, making it more difficult to advise or motivate these parents with regard to healthy nutrition or physical exercise (Schefske et al., 2010). At the same time, research has shown that child growth is greatly influenced by socio-economic status, and that the problem of overweight is greater among low-income families, making extra support by CHC practitioners more necessary (Graitcer & Gentry, 1981).

A strength of this study is that the response rate was remarkably high, which might be because there was direct contact with the respondents. This study was performed among CHC practitioners working for four CHC organizations in different regions of the Netherlands, to achieve a better representativeness of our sample fort the Netherlands as a whole. The slight differences between the south and the northern and central part of the Netherlands are explainable, because the overweight protocol was earlier implemented in the south part of the Netherlands. Since we found hardly any differences between the organizations, these findings may be broadly transferable to the national level of child care.

5. Implications

A number of recommendations emerge from this study. Changing CHC practitioners' attitudes and behavior towards early overweight management and protocol application will require more support in terms of improving their knowledge and skills. It is especially the CHC practitioners working in low-SES areas who should receive more support from their organization, as they indicated that they expected less impact from the use of the overweight protocol, and as the problem of overweight is known to be greatest in these areas. Further research is necessary to provide practitioners with essential information about education methods and materials specifically aimed at this low-SES group.

Furthermore, it seems important not only to motivate parents to achieve a healthier lifestyle, but also to set systematic long-term goals for empowering and supporting parents in order to help them actually achieve healthier behavior. Behavioral change cannot be achieved in a single consultation, but could be achieved by repeatedly discussing this theme. This would appear to be a task for the nurses rather than for the physicians, in view of the educational aspects involved. Clear allocation of tasks and sufficient training of competencies and skills to discuss (the risk of) overweight with parents is essential for effective prevention. Another good opportunity to discuss prevention of overweight with parents is when the babies start additional nutrition. In fact, overweight prevention starts in pregnancy, and it should be a recurring theme in the CHC program. During the first consultation in the CHC program, practitioners can ask parents about lifestyle risk factors for overweight, such as their own weight. This is because it is known that overweight is a part of the family system.

Also, since the CHC monitors children's growth and development, and there are about eight consultations during the child's first year, an effective and practical instrument to detect a child at risk for overweight already in the child's first year may help CHC practitioners discuss overweight prevention with parents.

6. Conclusion

We may conclude that there is a need to improve the prevention of overweight among very young children, even those who are not yet overweight. A great deal of health can be gained if prevention of overweight starts already it in the child's first year.

Training of skills to discuss the problem of overweight with parents is needed, especially with unmotivated parents and parents who resist such attempts. This seems especially true for CHC nurses who work in low-SES areas. Furthermore, a more systematically and effective implementation strategy as well as sufficient follow-up and essential preconditions, such as risk communication skills and a clear monitoring instrument could influence a better protocol use in daily CHC practice. This may result in a better preventive overweight management in child health care settings.

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