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Quality of weight-loss counseling by Dutch practice nurses in primary care: an observational study

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ABSTRACT

Background/objective: To assess the quality of weight-loss counseling provided by Dutch primary care practice nurses (PNs) to overweight and obese patients including both PNs' compliance with the Five A's Model for behavioral counseling in primary care, and the use of different communication styles. In addition, relationships between PN/patient characteristics (including Five A's) and communication styles will be examined.

Subjects/methods: In this observational study, 100 videotaped real-life consultations, collected in 2010/2011, were viewed using an observational checklist. Selection of consultations was based on PNs' registration of patient's complaint. The quality of weight-loss counseling was assessed by the Five A's Model (sequence of evidence-based practice behaviors that are effective for helping patients to change health behaviors) and by PNs' communication styles. Moreover, several PN and patient characteristics were registered. Descriptive statistics and logistic regression analysis were conducted with significance set at $P < 0.05$.

Results: PNs most frequently arranged follow-up, assessed the risk and current behavior and advised. However, they rarely assisted in addressing barriers and securing support. For weight or physical activity, most PNs used a motivational communication style. In discussions of nutrition, they mostly used an informational communication style. Moreover, PNs used a combination of communication styles. PN characteristics, including their behavior concerning

the Five A's, were stronger related to communication styles than patient characteristics.

Conclusions: PNs reasonably complied with the Five A's Model. The quality of PNs' weight-loss counseling might be increased by routinely providing assistance in addressing barriers and securing support, and routinely reaching agreement with collaboratively set goals.

INTRODUCTION

Overweight and obesity are increasing worldwide.¹ Overweight and obesity may cause different health problems, such as type 2 diabetes, cardiovascular disease and hypertension.² Reviews provide evidence that nutrition communication can be effective in changing dietary behavior.^{3,4} Primary care providers are in a unique position to advise patients about lifestyle, including nutrition.^{5, 6, 7, 8} In Dutch healthcare systems, general practitioners (GPs) have a fundamental role as gatekeepers. To reduce the workload of GPs and to improve the quality of care of chronically ill people, primary care practice nurses (PNs) were introduced around 1999 in Dutch general practice.⁹ PNs are specially trained nurses who provide care to chronically ill people, monitor treatment outcomes and offer follow-up contacts. GPs delegate tasks, such as support for lifestyle change, to PNs. Nowadays, motivational interviewing is part of education of PNs in the Netherlands. PNs work under the supervision of GPs, which means that they cannot diagnose, refer patients or prescribe medicines without the permission of a GP. Furthermore, PNs manage consultations independently. Scandinavian countries and the UK show a similar system. Previous research showed that both GPs and PNs in Ireland regularly conduct lifestyle counseling, although provision of simple lifestyle information and advice is still the predominant strategy.¹⁰ Weight management is considered as just one aspect of the PN's work in the UK.¹¹ Significantly more PNs than GPs in the UK believe that their work includes detection of obesity or physical activity¹² and PNs more often report discussing weight-related issues than GPs.¹³ A Dutch study among dieticians showed that basic training in motivational interviewing changed their counseling style and resulted in lower saturated fat intakes in their patients.¹⁴ Dutch PNs are confident to provide motivational interviewing.¹⁵ When specially trained, PNs are probably better equipped for lifestyle counseling than GPs in the Netherlands.¹⁶

Several observational studies are performed on how GPs perform lifestyle counseling^{17, 18, 19} and weight-loss counseling.^{20, 21, 22, 23, 24, 25} Yet, the quantity of such counseling is far more often studied than its quality.²⁶ Besides, as far as we know, only few studies investigated lifestyle counseling by PNs,^{17,19,27} but only the latest study specifically addresses weight-loss counseling. In our larger research project, we recently gained insight into the content of PNs' advices to overweight and obese patients by distinguishing the main categories in terms of weight, nutrition or physical activity advices.²⁷ As a result, we recommended to focus on the quality of advices provided by PNs. More insight is needed to understand the way PNs advise their overweight and obese patients.

The Five A's Model for behavioral counseling in primary care²⁸ is an analytical framework to evaluate the quality of counseling (Table 1). The Five A's provide a sequence of evidence-based practice behaviors that are effective in helping patients to change health behaviors,²⁹ endorsed by Centers for Medicare and the United States Preventive Services Task Force.³⁰ The Five A's constitute an idealized picture with the intent that primary care providers show all five steps (that is, practice behaviors) in primary care consultations, and can be used for quality improvement.²⁹ Two recent reviews revealed that the Five A's is an useful model highlighting the skills needed to provide high-quality weight-loss counseling^{30,31} and can produce modest long-term weight loss.³⁰ To our knowledge, the Five A's are so far only measured in studies regarding weight-loss counseling among GPs,^{22,32,33} but not yet among PNs.

[TABLE 1]

The quality of counseling is also reflected in the use of different communication styles across various situations.³⁴ In a study among GPs, five nutrition communication styles are assessed^{35,36} (Table 1). Another qualitative study among PNs identifies four advice-giving styles.³⁷ It is not known as to what extent PNs apply different communication styles in real-life PN-patient consultations depending on the situation. PN characteristics, such as age, might be related to PNs' communication style. Moreover, PNs' communication style might also be related to certain patient characteristics, such as gender.³⁴ To better understand the interaction between PNs and patients, relationships between their characteristics and communication styles need to be examined.

In our former publication examination of the content of advices has been the main goal, whereas the aim of the present study is to assess the quality of weight-loss counseling provided by PNs to overweight and obese patients, using a mixed methodology of the Five A's model for behavioral counseling in primary care²⁸ and communication styles.^{35,36} In addition, relationships with PN/patient characteristics will be examined.

MATERIALS AND METHODS

Design

Videotapes of real-life PN-patient consultations were made as part of the study of Noordman *et al.*¹⁹: 19 PNs took part, of whom approximately 10 routine consultations per PN were recorded in 2010 and again in 2011. PNs from GPs participating in a former observational study were asked to participate. Ten PNs working in seven practices agreed and in another healthcare center ten PNs volunteered. Because one PN stopped working, 19 PNs in total participated. Both PNs and patients provided informed consent before recording with an unmanned digital camera. They were not aware that observations focused on lifestyle counseling, but PNs were aware of the evaluation of motivational interviewing skills. Ethical principles were adhered to. Potential component of these consultations was the discussion of lifestyle with a mixed group of patients with type 2 diabetes, chronic obstructive pulmonary disease and hypertension.

For the present study, 100 consultations between PNs and overweight and obese patients were selected, based on PNs' registration of patient's complaint (Figure 1). We previously reported the content of PNs' advice to overweight and obese patients (for further details see van Dillen *et al.*²⁷). Table 2 shows the characteristics of visits between PNs and overweight and obese patients.

[FIGURE 1.] [TABLE 2]

Observation instrument

To assess the quality of PNs' weight-loss counseling to overweight and obese patients, we specifically developed an observational checklist for our project, including items about the Five A's, communication styles, PN characteristics and patient characteristics. The observation checklist was partly based on published work, including our own research team (available with SMEvD).

We used the Five A's Model²⁸ as our theoretical framework. This model includes the following: Assess risk, current behavior and readiness to change; Advise change of specific behaviors; Agree to and collaboratively set goals; Assist in addressing barriers and securing support; and Arrange for follow-up (Table 1). Overall *Five A's* were measured by 18 items, as described by Jay *et al.*³² A higher score on the overall *Five A's* (based on sum scores) means higher quality of weight-loss counseling. Factor analysis based on acceptable factor loadings was performed to construct conceptually different factors. With respect to Assess (Table 1), two conceptually different factors were constructed with factor analysis, namely 'Assess readiness to change' (three items, Cronbach's $\alpha=0.72$) and 'Assess risk and current behavior' (three items, $\alpha=0.34$). Advise was operationalized by four items: whether or not PNs advised to lose weight, advised how much weight to lose, discussed specific changes in nutrition or changes in physical activity. The factor Advise consisted of the first three items ($\alpha=0.47$). Agree was measured by three items: whether or not PNs agreed by working to set goals, involving patient in setting goals or helping to set realistic goals ($\alpha=0.85$). Assist consisted of one item about assistance by talking with the patient about dealing with things that makes it hard to lose weight. Finally, Arrange was assessed by four items: whether or not PNs arranged by scheduling follow-up, referring to weight management clinic, local support groups or a dietician. Two conceptually different factors were constructed for Arrange (Table 1), namely 'Arrange for follow-up by others' (last two items, $\alpha=0.85$) and 'Arrange for personal follow-up' (one item).

Furthermore, the quality of PNs' weight-loss counseling was assessed by looking at the (combination of) nutrition communication styles, which we used in our quantitative study among GPs.³⁵ The quality of counseling is also reflected in the use of different communication styles across various situations.³⁴ Five nutrition communication styles were measured by eight items per style, namely an informational, motivational, confrontational, holistic and reference style (Table 1). The same forty items (eight items for each of the five nutrition communication styles) as in the study of GPs³⁵ were used in the observational checklist and coded if applicable (binominal). Besides communication styles for nutrition, we also specifically scored these items with respect to weight and physical activity. A higher

number of communication styles for weight, nutrition and physical activity means higher quality of weight-loss counseling.

PNs' communication style might be influenced by PN or patient characteristics. PN characteristics recorded were age, years of practice experience, type of practice and length of visit. Noordman *et al.*¹⁹ also recorded lifestyle behavior protocol, BECCI (Behavior Change Counseling Index) and MAAS-Global. The lifestyle behavior protocol consists of four items to rate the volume and level (generic or tailored) of the discussion of patients' lifestyle behavior, which were coded when present.¹⁹ The BECCI contains 12 Likert-scaled items related to providers' motivational interviewing techniques, ranging from 'not at all' to 'a great extent'.³⁸ The MAAS-Global consists of 17 items to rate providers' generic communication and clinical competence, ranging from 0 'not present' to 6 'excellent'.³⁹ In the final analysis phase, we also included the Five A's components as PN characteristics, because they also reflect PNs' practice behaviors aimed at behavioral change, similar to the above-mentioned lifestyle behavior protocol, BECCI and MAAS-Global. We hypothesized that PNs who apply certain components of the Five A's were more likely to show a similar communication style, for example, Assess readiness to change and motivational communication style.

Patient characteristics registered were gender, age, education, marital status, ethnicity, perceived health, physical activity level, stage of behavioral change, body weight, health complaint, number of visits to PN, perceived importance of PN providing advice/nutrition advice/physical activity advice and perceived role regarding advice/offering support by GPs or PNs (Table 2).

A pilot test with ten consultations was performed to adjust our observational checklist. Next, SMEvD observed all 100 selected consultations. Of these, ten were viewed by a second observer to check for interrater reliability. Differences were discussed until consensus was reached. The Five A's showed a kappa of 0.64, that is, substantial agreement.⁴⁰ Interrater reliability of communication styles was considered moderate (kappa=0.55).

Statistical analysis

SPSS version 19 (Chicago, IL, USA) was used for statistical analysis. To study whether different components of the Five A's were present or not, we performed factor analysis using principal component analysis with varimax rotation. Factor loadings above 0.55 were considered acceptable, and subsequently reliability analysis was performed. Owing to the small number of items, low alpha reliability coefficients were found for some components of the Five A's, but we decided to retain these because of acceptable factor loadings. Descriptive statistics were computed for the other variables. To examine relationships between the Five A's and communication styles, Pearson correlation coefficients were computed. Finally, to determine the association between these communication styles, and PN or patient characteristics, logistic regression analysis was used, computing odds ratios (ORs). Components of the Five A's were also considered as PN characteristics. Potential influence of each PN or patient characteristic mentioned in the Materials and

Methods was separately assessed, using enter procedure. For some characteristics, a median split was used. *P*-values <0.05 were considered significant.

RESULTS

PN/patient characteristics

With respect to PN characteristics, all PNs were female and their mean age was 42.4 years (s.d.=5.9). They had on average 4.4 years of practice experience (s.d.=2.8). Nine PNs worked in a healthcare center, nine were part of a group practice and one PN worked in solo practice. Mean length of visit was 25.2 min (s.d.=10.0). Lifestyle behavior protocol mean score was 1.2 (s.d.=1.0), which means that there is room for improvement in terms of discussion of patients' lifestyle behavior. BECCI mean score was 1.9 (s.d.=0.6), which means that they apply motivational interviewing skills to some extent. MAAS-Global mean score was 3.5 (s.d.=0.4), implying that their generic communication and clinical competence is satisfactory.

Furthermore, patient characteristics are described in Table 2.

Five A's model

Table 3 describes PNs' use of the different Five A's components in visits with overweight and obese patients. PNs used at least one of the Five A's. During the PN visits, PNs most frequently arranged for personal follow-up, and assessed risk and current behavior. They also regularly advised to change specific behaviors. In about half of the visits, they agreed and collaboratively set goals, and arranged for follow-up by others. However, they rarely assisted in addressing barriers and securing support. Although Five A's components were observed to be used, this appeared on average only one or two times per visit.

[TABLE 3]

Communication styles

Table 4 shows the number of communication styles used for discussing weight, nutrition and physical activity by PNs in weight-loss counseling with overweight and obese patients, if at least one item/aspect of the style was observed. Higher scores were found for communication styles for discussing nutrition than for weight or physical activity, especially in the case of reference communication style. In the majority of visits, an informational communication style could be distinguished for nutrition. High percentages were also found for motivational, reference and holistic communication styles for nutrition. A motivational communication style was most often observed for weight, followed by an informational communication style. A motivational or holistic communication style was frequently discerned for physical activity. However, a confrontational communication style was rarely used for physical activity.

[TABLE 4]

PNs used a combination of communication styles. On average, they used three communication styles for nutrition per consultation (mean=3.0, s.d.=1.3), against two for weight (mean=2.1, s.d.=1.0) and two for physical activity (mean=2.1, s.d.=1.2).

Relationships between PN/patient characteristics and communication styles

In total, 14 PN characteristics (the first seven characteristics mentioned in the Materials and Methods and seven components of the Five A's as shown in Table 3) were separately assessed for their relationship with communication styles. Moreover, 19 patient characteristics as shown in Table 2 were separately assessed. Table 5 only shows significant relationships found between PN or patient characteristics, and motivational communication style for weight, informational communication style for nutrition or motivational communication style for physical activity. Our results indicated that PN characteristics had a higher predictive value than patient characteristics: the only significant patient characteristic found was perceived importance of PNs providing advice (OR=0.83, $P<0.05$), implicating that a more positive attitude related to a smaller chance to use a motivational communication style for physical activity.

[TABLE 5]

Moreover, different components of the Five A's were found as the major predictors: Advise, Agree and Assess risk and current behavior for an informational communication style for nutrition (OR=2.72 respectively 2.01, $P<0.01$; OR=1.91, $P<0.05$); Assess risk and current behavior for a motivational communication style for physical activity (OR=2.19, $P<0.01$); and Assess readiness to change for a motivational communication style for weight (OR=2.06, $P<0.01$).

With respect to other PN characteristics, higher age (45 years or older) of PNs was significantly related to both an informational nutrition communication style and a motivational weight communication style (OR=3.81 respectively 2.51, $P<0.05$). PNs who worked in a healthcare center were less likely to use a motivational communication style for weight (OR=0.44, $P<0.05$). PNs with a higher score on the lifestyle behavior protocol were more likely to use an informational communication style for nutrition (OR=1.64, $P<0.05$). Furthermore, a long visit (25 min or more) was significantly related to a motivational communication style for physical activity (OR=1.05, $P<0.05$).

DISCUSSION

PNs have an important role in behavioral counseling in primary care, which is reflected in our results: PNs reasonably complied with the Five A's Model. In an ideal situation, the Five A's are completely followed, but there is definitely room for improvement. According to Jay *et al.*,³² each additional Five A was associated with higher patient motivation and intentions to lose weight. Our study found rather high scores on Arrange and Assess components. To our knowledge, we were the first to assess the quality of PNs' weight-loss counseling by means of the Five A's, so we could only make comparisons with studies among GPs. Another study among American GPs found that Assess occurred most, followed by Advise, whereas Agree, Assist and Arrange were reported less often.³² Other studies among GPs with a slightly different classification of the Five A's found that GPs routinely Ask and Advise patients to lose weight, but they rarely Assess, Assist or Arrange.^{22,33} High frequency of Arrange for personal follow-up might be explained by the fact that

regular follow-up appointments with PNs are usually scheduled to guide patients with chronic illnesses (that is, every 3 months), which is not necessarily the case for GPs.

Our study showed that PNs were not likely to assist in addressing barriers and securing support, and they were not likely to agree to set goals. Possibly low motivation to change behavior among overweight or obese patients might discourage PNs to make use of Assist or Agree. Probably, we can learn from barriers and driving forces among GPs,^{5, 6, 7, 41, 42} because to a certain extent barriers (such as lack of time, lack of patient motivation) and attitudes will also exist among PNs.

With regard to communication styles, an informational communication style for nutrition was used in most visits, possibly because nutrition advices are very diverse,²⁶ and PNs might find it necessary to enhance patients' nutrition knowledge. However, if PNs discussed weight or physical activity, a motivational communication style was most often used, possibly because of PNs' role to guide patients with chronic illnesses. Although PNs were trained in motivational interviewing as part of their education, PNs applied motivational interviewing to some extent only.¹⁹ Confrontational communication styles were rarely observed, similar to a study among PNs, which found that persuasive and permitting styles are rarely used because of their directive approach.³⁷ In particular, for physical activity, PNs were less likely to appoint to figures and charts. Another remarkable finding is the relatively high number of use of a reference communication style for nutrition. This can be explained by PNs' readiness to solve the problem by dietitian referral.

Our study showed that PNs used a combination of communication styles for weight, nutrition and physical activity. They used on average three communication styles for nutrition per consultation, but also two for weight and two for physical activity. On the basis of these results, the quality of weight-loss counseling can be considered moderate. PNs seem to act as chameleons by adapting their style to the specific circumstances, similar to GPs.³⁵

PN characteristics showed stronger relationships with communication styles than patient characteristics. The Five A's were predictive for communication styles as were PNs' sociodemographic characteristics, such as age and type of practice. In our study about GPs' nutrition communication styles, GP characteristics were more strongly related than patient characteristics.³⁵

A strength of this study lies in its innovative character: we were the first to study PNs' weight-loss counseling, and the Five A's as theoretical framework were not used before among PNs. Another strength is that real-life consultations between PNs and overweight and obese patients were observed, which directly reflect actual PN communication behavior. A limitation is that only one consultation is studied, which is selected at random out of a whole process of continuity of care. It is therefore possible that the counseling approach might change over time. Another limitation is that the majority of our population is diabetic, which might have implications for desired advice. We did not succeed in developing a reliable factor for Assess risk and current behavior. However, despite low alpha reliability, we found very significant

results for two out of three communication styles. Another limitation is the possible accumulation of type I errors. Finally, generalizability of our results is limited owing to a relatively small sample of Dutch PNs. Results may differ in other countries with other health policy (such as the UK) or healthcare system (such as the USA and Australia).

In this study, we gained a better understanding of the practice behaviors used in PN-patient consultations. The results can be used for quality improvement among PNs. If PNs want to improve the quality of their weight-loss counseling, they need to use more Assist (offer of help to address barriers and secure support) and Agree (match and collaboratively set goals), because best practice recommends to use all Five A's components. With respect to Assist, it is not only important to assist patient by addressing social, medical, emotional and economic barriers, but also facilitators such as motivation and support for successful behavioral change.

It is important to stress this in PNs' vocational education and postgraduate training. Agree might be definitely improved by helping to set realistic goals surrounding weight-loss behavior. Future research should focus on key elements required to be included in these goals.

Moreover, our study showed that PNs use a combination of different communication styles, but more combinations are definitely desirable. Meanwhile, it remains still unclear as to which specific communication style triggers the highest quality of weight-loss counseling. This is certainly a subject for future research.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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TABLES AND FIGURES

Table 1. Description of Five A's Model for behavioral counseling in primary care²⁸ and communication styles^{35,36}

<i>Description</i>	
<i>Five A's model</i>	
Assess	Identification of current behavior and determination of the patient's readiness to change behavior
Advise	Recommendation that the patient would benefit from changing behavior
Agree	Match and collaboratively set goals
Assist	Offer of help to address barriers and secure support
Arrange	Establishment of a method of follow-up to track the patient's progress by the same professional or by other professionals
<i>Communication styles</i>	
Informational communication style	Providing information about lifestyle (weight, nutrition or physical activity)
Motivational communication style	Guidance in behavioral change
Confrontational communication style	Warning about lifestyle related to health complaint
Holistic communication style	Involving several aspects as being part of living circumstance
Reference communication style	Talking about referrals to other health professionals to deal with lifestyle

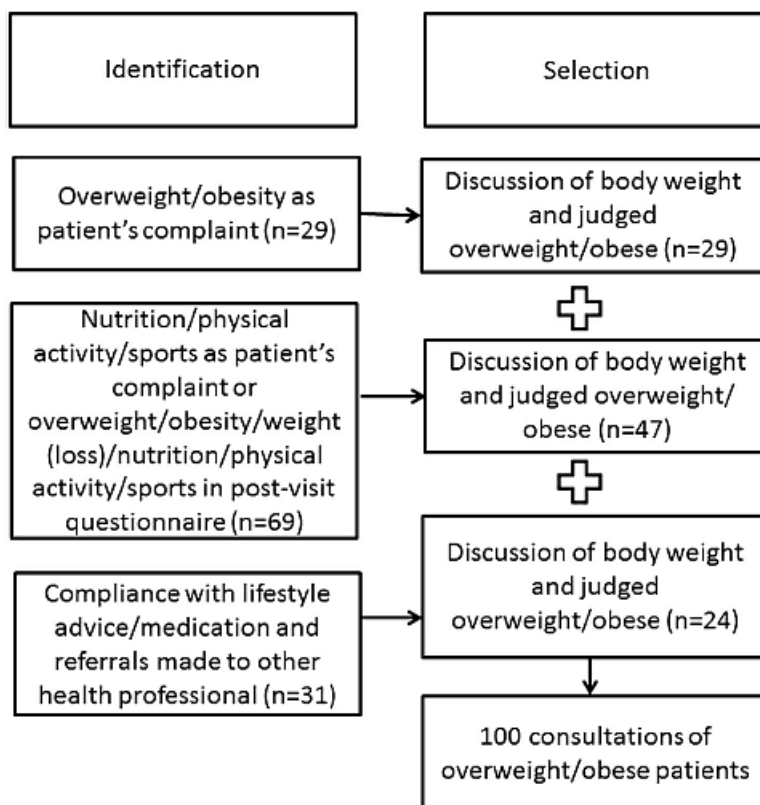


Figure 1. Selection of consultations between PNs and overweight and obese patients.

Table 2. Characteristics of 100 overweight and obese patients (The Netherlands, 2010/2011)

<i>Characteristics</i>	<i>Patients</i>
Women (%)	56
Mean age in years (s.d.)	60.0 (s.d. = 12.0)
Low education level (%)	26
Married/living together (%)	69
Dutch ethnicity (%)	88
(Very) good perceived health (%)	62
Meets recommendation of healthy physical activity (%)	50
Action or maintenance stage of behavioral change (%)	19
Mean body weight in kg (s.d.)	94.8 (s.d. = 17.3)
Health complaint diabetes type 2 (%)	58
Health complaint hypertension (%)	27
Health complaint impaired glucose tolerance (IGT) (%)	11
Health complaint hypercholesterolemia (%)	11
Mean number of visits to PN (s.d.)	7.2 (s.d. = 7.8)
Perceived PN providing advice (very) important (%)	92
Perceived PN providing nutrition advice (very) important (%)	60
Perceived PN providing physical activity advice (very) important (%)	65
Perceived it as PNs' role to advise (%)	81
Perceived it as PNs' role to offer support (%)	76

Abbreviation: PN, practice nurse.

Table 3. Mean scores, s.d. and the percentage of use of Five A's by 19 practice nurses (The Netherlands, 2010/2011)

<i>Five A's components</i>	<i>Number of items</i>	<i>Mean</i>	<i>s.d.</i>	<i>Use (%)</i>
Assess readiness to change	3	1.1	1.1	59
Assess risk and current behavior	3	1.8	0.8	94
Advise	3	1.2	1.0	70
Agree	3	1.2	1.3	53
Assist	1	0.3	0.5	28
Arrange for follow-up by others	3	0.7	0.7	50
Arrange for personal follow-up	1	1.0	0.2	95
Overall Five A's	18	7.5	3.3	100 ^a

Data are shown for visits between 19 practice nurses and 100 overweight and obese patients. Analysis of Five A's components is based on item scores. ^aThey used at least one of the Five A's, but different combinations were possible. In 21 visits with overweight and obese patients, all five components of the Five A's were observed. In another 27 visits, PNs used Assess, Advise, Agree and Arrange, but not Assist.

Table 4. Percentage of use of communication styles for weight, nutrition and physical activity by 19 practice nurses and its combinations (The Netherlands, 2010/2011)

<i>Communication style</i>	<i>Weight (%)</i>	<i>Nutrition (%)</i>	<i>Physical activity (%)</i>
Confrontational style	31	32	8
Motivational style	59 ^a	70	69 ^b
Informational style	44	76 ^c	44
Holistic style	42	60	68
Reference style	31	61	22

Data are shown for visits with 100 overweight and obese patients, in which communication styles have been used for weight, nutrition and physical activity by 19 practice nurses (at least one item of the specific style observed). ^aOf the 59 visits in which a motivational communication style for weight was noticed, 26 visits also contained a holistic style, 25 visits contained an informational style, 19 visits contained a reference style and 17 visits contained a confrontational style. ^bFrom the 69 visits in which a motivational communication style for physical activity was observed, a holistic communication style was also notable in 47 visits, an informational style in 32 visits, a reference style in 15 visits and a confrontational style in 7 visits. ^cFrom the 76 visits in which an informational communication style for nutrition was observed, a motivational communication style was also distinguished in 57 visits, a holistic style in 50 visits, a reference style in 47 visits and a confrontational style in 28 visits.

Table 5. Logistic regression analysis for communication styles of 19 practice nurses (The Netherlands, 2010/2011)

	<i>OR (95% CI) motivational communication style for weight</i>	<i>OR (95% CI) informational communication style for nutrition</i>	<i>OR (95% CI) motivational communication style for physical activity</i>
<i>PN characteristics</i>			
Assess readiness to change	2.06 (1.35–3.13)**	—	—
Assess risk and current behavior	—	1.91 (1.04–3.52)*	2.19 (1.21–3.95)**
Advise	—	2.72 (1.49–5.00)**	—
Agree	—	2.01 (1.26–3.22)**	—
Age ≥45 years	2.51 (1.05–6.01)*	3.80 (1.29–11.29)*	—
Healthcare center	0.44 (0.23–0.91)*	—	—
Long visit ≥25 min	—	—	1.05 (1.00–1.10)*
Lifestyle behavior protocol	—	1.64 (1.05–2.57)*	—
<i>Patient characteristics</i>			
Perceived importance of PNs providing advice	—	—	0.83 (0.69–1.00)*

Abbreviations: CI, confidence interval; OR, odds ratio; PN, practice nurse. Data are shown for motivational communication style for weight, informational communication style for nutrition and motivational communication style used for physical activity by 19 practice nurses in visits with 100 overweight and obese patients. Only significant relationships are shown in the table, and the sign '—' means 'not significant'. All PN or patient characteristics for which there were no significant relationships with any of the three communication styles were omitted from the table. * $P < 0.05$, ** $P < 0.01$.