Evaluation of a Nurse-led Aftercare Intervention for Patients With Head and Neck Cancer Treated With Radiotherapy and Cisplatin or Cetuximab

**Background:** The supportive needs for head and neck cancer (HNC) patients during the vulnerable period after treatment are not always met. Therefore, more professional support regarding physical, social, and psychological care as well as lifestyle is recommended. **Objective:** This study is an evaluation of a nurse-led aftercare intervention to support patients recovering from HNC treatment. **Methods:** Intervention group (IG) participants received 2 extra consultations from a nurse practitioner 3 and 9 months after treatment of HNC. A holistic conversational tool, the Self-Management Web, was developed to guide the nurse through the conversation. Primary outcomes were health-related quality of life (HRQoL) and quality of patient-centered care. A secondary outcome was self-management skills. **Results:** Twenty-seven patients were included in the IG, and 28 were included in the control group. Differences in HRQoL and self-management between the IG and the control group were not statistically significant. For the IG, all domains of the Self-Management Web were perceived important and addressed by the nurse practitioner. **Conclusion:** This holistic nurse-led aftercare...
W orldwide, head and neck carcinomas are the sixth leading cancer by incidence. In the case of locally advanced head and neck cancer (HNC), organ-sparing treatment with the use of radiotherapy combined with cisplatin or cetuximab is the preferred treatment. This type of treatment is associated, however, with high toxicity profiles. The most common adverse effect is disruption in the function and integrity of the mucosa of the mouth, which results in mucositis, manifesting itself anywhere from a mild burning sensation to large and painful ulcers that have a high impact on patients' health-related quality of life (HRQoL). Mucositis leads to a decrease in patients' physical well-being, energy, and strength. The reduced swallowing function is a disturbing adverse effect, but it usually recovers during the first weeks and months after treatment. Other adverse effects such as dry mouth, sticky saliva, and functional disturbance in opening one's mouth can deteriorate significantly. Apart from these physical impairments, high levels of psychological afflictions such as depression, anxiety, and distress are often observed. In addition, HNC patients who are younger, have a lower socioeconomic status, and are unemployed as well as those with self-reported comorbidity generally experience a poor HRQoL. An earlier study of our research group showed that the acute and long-term adverse effects can drastically influence patients' daily lives. Head and neck cancer patients have to deal with both physical and psychosocial symptoms. In addition, they have to build up their self-confidence, which is necessary to be able to resume their lives. For many patients, it is difficult to manage health-related chronic conditions and integrate them in their daily lives with the aim of achieving optimal quality of life (QoL).

People with cancer live longer and have to manage their cancer as a chronic illness. Moreover, they are expected to be capable enough to take responsibility for their own care. Although self-management and self-regulation are useful frameworks, for oncology practices, these concepts are still challenging models to empower cancer survivors. The concept of self-management has been defined into 5 core self-management skills: problem solving, decision making, resource utilization, forming a patient–healthcare provider partnership, and taking action. Self-management support asks for an individualized approach per patient. To focus on patients' intrinsic processes, a combination of 4 nursing perspectives is most effective, that is, as coach, clinician, gatekeeper, and educator. Assessment of self-management abilities should play a role in the rehabilitation for HNC patients to help them in setting goals.

During the vulnerable period after treatment, the supportive needs for HNC patients are not always being met. More professional support is needed regarding physical care, lifestyle programs, and social and psychological care. Such needs might be addressed by a practical, nurse-led self-management aftercare intervention during the initial posttreatment period. To develop such an intervention, we used the intervention mapping (IM) approach. The key element of this intervention is coaching patients in developing problem-solving skills and self-confidence to enable them to take more control of their own rehabilitation. This study represents a first assessment of the effects of a nurse-led aftercare intervention for patients treated for HNC with radiotherapy combined with chemotherapy or cetuximab. Primary outcomes were HRQoL and quality of patient-centered care. Secondary outcomes were self-management skills.

### Methods

#### Development of the Nurse-led Aftercare Intervention

For the development of the intervention, we used the IM procedure (https://interventionmapping.com). The IM protocol distinguishes 6 steps with corresponding tasks (Figure 1). In total, the development and implementation of the intervention took 2 years (2015–2017). The first 4 steps of the IM procedure were executed together with colleagues in kidney transplantation (Figure 1).

#### Step 1: Needs Assessment

In this step, the needs of patients in treatment for HNC, nurses, and nurse practitioners (NPs) regarding self-management (support) were explored in several qualitative studies. First, we reviewed the qualitative literature on patients' needs and preferences for self-management support; this review revealed that, for patients with chronic conditions, it is important that self-management support is tailored to their individual needs. Furthermore, they need information and instrumental, psychosocial, and relational support. Patients often reported that these needs were unmet because professionals focus on informational and instrumental support alone. Developing a collaborative partnership with shared decision making is key to improving self-management support. This encouraged us to further assess the specific needs, preferences, and challenges with regard to self-management support of HNC patients in 2 focus groups and 6 individual interviews (total N = 13). Most patients wished to receive professional support for dealing with posttreatment consequences. Apart from physical...
complaints, patients had difficulties in dealing with the emotional aspects of HNC and its treatment and struggled with building self-confidence to move on with their lives.

To explore nurses’ perceptions, attitudes, and potential needs, interviews were held and observations were performed. All participants worked at the same university medical hospital in various outpatient departments. Individual semi-structured interviews with nurses and NPs were held (n = 27) to investigate nurses’ views on the concept of self-management in general and how these views related to the self-management interventions they use in clinical practice. Results showed 3 distinct views on self-management support as follows: adhering to a medical regimen, monitoring symptoms, and integrating illness into daily life; only the last viewpoint reflected a holistic approach with the nurse focusing on coaching. Medical management was the focus of self-management for many nurses. The lack of attention for psychosocial aspects may be attributed to a lack of confidence, skills needed to address psychosocial issues, or available tools or interventions that limited them in offering psychosocial support. To more objectively assess NPs’ roles and skills in outpatient consultations and how this compared with their perception of their responsibilities for patients with chronic conditions, NPs (n = 5) were observed during daily practice. Although NPs reported that they considered building a relationship with their patients of utmost importance, their consultations were mostly based on a conventional medical model of medical history taking. Little attention was paid to the social, psychological, and behavioral dimensions of illness. Finally, a realist review of the literature was conducted to understand how nurse-led interventions that support self-management of patients with chronic conditions work and in what context they work successfully. Interventions focusing on intrinsic processes were found to be the most effective, as opposed to focusing solely on education.

Program Goals

On the basis of the needs assessment described previously, we developed a nurse-led self-management support intervention that included the following key elements: a general, open structure that leaves room for individual preferences and tailoring of support; a holistic approach encompassing medical, emotional, and social self-management challenges; promoting shared decision making between nurses and patients; and patient empowerment by supporting self-efficacy and intrinsic motivation. The overall goal of the intervention is for patients with HNC to enhance their self-management skills to integrate their treatment and life goals and subsequently optimize their HRQoL and health-related outcomes. In addition, we aimed to improve NPs’ skills to optimize self-management support.

Step 2: Matrices of Change Objectives

The second step of IM links the overall goals of the intervention to concrete actions by stating change objectives that specify who and what will change because of the intervention. To generate these change objectives, we combined performance objectives and the relevant determinants into a matrix. Change objectives were formulated both for patients and for NPs. The performance objectives for NPs were guided by the self-regulation theory. In addition, the intervention focused on 3 components of the Five As model, namely, assessing behavior, beliefs, and...
motivation; agreeing with the patients on realistic goals; and assisting patients to anticipate barriers and develop a specific action plan.

**Step 3: Theory-Based Methods and Practical Strategies**

In step 3, theory-based methods were selected and translated into practical strategies to influence each determinant to achieve the change objective. For example, techniques from motivational interviewing were used to promote motivation. Principles of solution-focused brief therapy were used for the goal- and action-oriented change objectives.

**Step 4: Program Production**

In step 4, the actual program was developed. The intervention consisted of 2 extra, structured consultations with the NP with a duration of 30 minutes each. The conversations were based on solution-focused communication techniques, including goal setting, action planning, and monitoring progress. To encourage the patient’s active participation, a visual communication tool was developed with patients and nurses. This “Self-management Web” (SMW) presents 14 icons related to every-day life domains (Figure 2). The goal of this tool was to encourage an open conversation between nurses and patients. Patients were in control to choose the area they preferred to focus on. By ranking the domains according to importance if they were doing well (1 = green), neither good nor bad (2 = orange), or bad (3 = red), they determined the content of the conversation. The patient encircled his/her answers on the SMW and thus made the important issues for him/her to discuss explicitly. Subsequently, in dialogue with the nurse, the patient looked back on the treatment period and was encouraged to share the need for support to rebuild life after treatment. In case of a 2 or 3 answer on the web, the nurse asked open questions to clarify the problem. One week before the consultation, the SMW was sent to the patient’s home to be completed before consultation.

Recovering from challenging adverse effects takes place in the first weeks to months after treatment. Therefore, the first nurse appointment was planned after the most demanding period. This initial conversation was focused on setting priorities, defining goals, and making action plans for the future. After 1 month, the NP called the patient to evaluate these goals and to assess specific needs to reach the desired goals. During the second conversation, 6 months after the first one, the NP evaluated the goals and plans and assessed whether the patient had enough knowledge and skills to manage the illness and integrate these abilities in daily life. When necessary, the NP referred the patient to more specialized professionals.

**Step 5: Program Implementation Plan**

All sections of the intervention were recorded in a protocol. The NP was trained by an experienced psychotherapist in skills of

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**Can you tell me how it is going in the following areas:**

Choose your answer by checking:

1 = Well
2 = Neither good nor bad
3 = Bad

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**Figure 2** Self-management web.
motivational interviewing, and learned how to discuss the problems encountered and to apply techniques with which to convert these skills into practice. This concurred together with the NPs working in kidney transplantation. The NP also received feedback to improve the interviewing skills.

Step 6: Evaluation Plan

An evaluation protocol was developed consisting of a pilot study at the outpatient clinic of the Erasmus MC in Rotterdam, the Netherlands. Eligible patients for both the intervention group (IG) and the historical control group (HCG) were given a diagnosis of HNC and were successfully treated with radiotherapy and chemotherapy or cetuximab, were older than 18 years, were able to read and speak Dutch, and had no current signs of illness. Three months after treatment, before the start of the intervention, recipients in the IG received a questionnaire by mail (T0) followed by a second questionnaire 6 months after completion of the intervention (T1). While not withholding patients from possible benefits of the patient navigation intervention, we compared the IG with a retrospective HCG, who did not receive the intervention. The patients who ended their medical treatment between March and November 2015 were invited for the HCG in a consecutive order. When interested, they received an information letter, informed consent, and the questionnaire.

CARE AS USUAL

All patients received the usual treatment and care, consisting of a weekly consultation during treatment at the outpatient clinic with a radiation oncologist alternating with NP to check and manage treatment-related adverse effects. The purpose of the aftercare intervention was to improve patient-centered aftercare and empower patients in taking control of their rehabilitation from a holistic view. The intervention added 2 extra consultations with the NP to the usual care protocol, 3 and 9 months after their treatment.

Measurements

QUANTITATIVE DATA

Health-related QoL was measured with the validated Dutch version of the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire 30 (EORTC QLQ-C30). The EORTC QLQ-C30 consists of 5 functional scales (physical, role, emotional, cognitive, and social), a symptom scale, and a global QoL scale. All the scales range in scores between 0 and 100. A high score on the functional scales represents a high degree of functioning, whereas a high score on the symptom scale represents a high level of symptom burden. On all scales, the Cronbach’s α showed a coefficient of greater than 0.70. The additional EORTC QLQ Head and Neck 35 version is a disease-specific measure to assess HRQoL among patients with HNC. This 35-item questionnaire generates 7 multiple-item scales in addition to 11 single-item scales, with an adequate internal consistency.

The Partners in Health scale rates a patient’s self-management skills. The Dutch Partners in Health scale consists of 2 subscales: (1) “knowledge and coping” and (2) “recognition and management of symptoms and adherence to treatment.” The Cronbach’s α of the subscales were 0.80 and 0.72, respectively. The correlation between the subscales was 0.43.

Self-efficacy was measured with the Self-Efficacy for Managing Chronic Disease 6-Item Scale, on a 10-point Likert scale, from 1 (not at all confident) to 10 (totally confident). The higher the score, the higher the degree of self-efficacy. The Cronbach’s α of the Self-Efficacy for Managing Chronic Disease 6-Item Scale is 0.91.

Patients’ experiences and appreciation in the quality of patient-centered care were measured with a subscale of the Consumer Assessment of Healthcare Plan Surveys (CAHPS). This subscale consists of 5 questions using a 5-point Likert scale from 1 (no, definitely not) to 4 (yes, definitely). The CAHPS is validated for the Dutch language (α = 0.90).

In addition, to evaluate delivered patient-centered care, we used a questionnaire based on the topics of the SMW. Patients indicated the importance of paying attention to various topics and the actual attention the NP paid to these topics. The scale consists of 14 items scored on a 3-point Likert scale (importance items: 1 = not important, 2 = somewhat important, and 3 = very important; attention items: 1 = no attention, 2 = some attention, and 3 = much attention). For the analysis, options 1 and 2 were recoded as negative and 3 was recorded as positive.

QUALITATIVE DATA

To assess fidelity and feasibility of the intervention, an independent researcher interviewed 6 random patients of the IG who had completed the intervention. The interview questions focused on the topics: support from the NP during the aftercare consultations; the importance of discussing a broad range of issues related to medical, emotional, and role management; and the use of the SMW.

In addition, to analyze fidelity, 6 randomly chosen consultations were observed by an independent researcher. She was not involved in the study, works at the same department, and is an expert in qualitative research. The main topic of the observation was whether the NP adhered to the procedure of the intervention. Themes of the observations were as follows: the introduction and use of the SMW, addressing needs for support, “where are you now” and “where do you want to go,” confirming the motivation to change, focusing on positive outcomes, and setting goals.

Data Analysis

QUANTITATIVE ANALYSIS

Quantitative data were analyzed using IBM SPSS Statistics version 24.0. Patient demographics, clinical characteristics, and questionnaires were summarized using descriptive statistics. Scores of all HRQoL scales were transformed into a 0-to-100 scale. Scores for the QLQ-C30 and QLQ Head and Neck 35 were calculated according to the EORTC scoring manual. The outcome measures are reported with medians and interquartile ranges. To analyze the impact of the intervention on patients’ HRQoL and self-efficacy, the Wilcoxon test was used for the baseline-
follow-up analysis within the IG (T0-T1), and the Mann Whitney test was used for testing differences between the IG (T1) and the HCG. Differences in the importance of the SMW topics within the IG were analyzed with the McNemar-Bowker test, and the difference between the IG and the HCG in this respect was analyzed with the trend test. Effect sizes for the outcome measures were calculated with the bias-correct effect size Hedges' $g$. Effect size was interpreted as small (0.20), medium (0.50), or large (0.80). A $P$ value of .05 or less (2-sided) was considered statistically significant.

QUALITATIVE ANALYSIS

All interviews were audio-recorded and were anonymized and transcribed verbatim. Qualitative data were summarized and discussed by 2 members of the research team. The observations were analyzed using a semistructured observation protocol with topics related to elements of the intervention (use of the SMW by the NP, focus on positive results, and goal setting).

ETHICAL CONSIDERATIONS

The study participants were informed about the study orally and in writing by the NP, and signed a document of informed consent. All participants were assured of confidentiality. Data were processed anonymously; only qualified researchers had access to the anonymized data. All data were stored on a password-protected secured server within the firewall of the hospital. The study was approved by the medical ethics review board.

Results

Participan t Demographics

Before implementation of the intervention, 40 patients were invited for the HCG, of whom 28 participated (enrollment rate, 70%). Of 94 eligible patients treated between November 2015 and November 2016, 65 were invited to participate in the IG. Of those, 38 (58%) were excluded because of disease progression (n = 24), death before start of the intervention (n = 7), or withdrawal of consent and/or nonresponse (n = 7). Thus, 27 patients were included, of whom 6 dropped out during the study because of consent withdrawal (n = 2) or death (n = 4) (Figure 3). The median age of the patients included was 62 years in both groups; most were male (IG vs HCG, 85% vs 64%, respectively), and most patients had either oropharynx cancer (IG vs HCG, 48% vs 43%, respectively) or hypopharynx cancer (IG vs HCG, 41% vs 36%, respectively; Table 1).

QUALITY OF LIFE AND QUALITY OF CARE

Patients’ scores for both cancer-related HRQoL and HNC-specific QoL did not significantly differ between the IG and the HCG (Table 2). Within the IG, medium effect sizes on HRQoL were found on physical (0.32) and cognitive (0.27) functioning and symptom scores (−0.48).

Medium effect sizes were also found for pain (−0.51), trouble with social eating (−0.47), teeth (−0.64), dry mouth (−0.75), and sticky saliva (−0.65) from the HNC-specific QoL.

No differences were found in both groups in the level of confidence in patient-centered care measured with the CAHPS (Table 2). Analysis revealed no statistically significant differences in self-management skills and self-efficacy (Table 2).

EVALUATION OF THE PATIENT-CENTEREDNESS OF THE AFTERCARE INTERVENTION

Results of the questionnaire based on the topics of the SMW showed that, for patients of the IG, nearly all 14 domains, which were rated as being important to discuss, were addressed by the NP. The top 3 most important domains were as follows: dealing with treatment recommendations, lifestyle, and handling of symptoms and adverse effects (Figure 4A). Remarkable finding was that, for patients, shared decision making was perceived as being important, but only in half of the cases addressed by the NP. The opposite was the case for illness-related knowledge, which was less frequently perceived to be important to the patients but was addressed more often. For the patients of the HCG, all domains of the SMW were perceived to be important to discuss (Figure 4B).

The 6 patients who were interviewed highly appreciated the aftercare intervention for discussing the 14 domains of the SMW, in particular, the nonmedical subjects. Patients indicated that the SMW form was comprehensive and they appreciated the broad range of topics of the SMW: “For me it is a good thing, it gives you more overview and the Web makes it easier to discuss things.” Another patient said, “The NP is familiar with my total medical trajectory and she looks further than that.” Patients deemed almost all themes to be important to discuss with the NP and stated that the SMW helps talking about difficult topics. One respondent explained: “Filled out [the Web] twice. I answered the topic of intimate relationships differently the second time. The NP started a whole conversation about that; my wife and I benefited greatly from that.” Concerning goal setting, 1 patient said, “The NP emphasized that you should not immediately return to your old employment situation. We set goals about the reintegration.” Some patients reported that, during the period of aftercare, the support for their spouses could be improved: “I did not need anything for myself, but my wife did.” With respect to the frequency of the aftercare conversations, the answers ranged from “two aftercare consultations are not enough” to “two is fine.”

Fidelity and Feasibility

All patients in the IG received the interventions as intended. The observations of 6 consultations revealed that the NP delivered the intervention as intended. The NP discussed the results of the SMW and addressed needs and motivation to change. The NP encouraged the patients to choose feasible and concrete goals. Not all patients wished to discuss goals, because they were already working on their own personal goals, independent of the consultations: “I do not need to discuss goals. I go for a walk and try to stay in shape.”

Discussion

This study represents the results of the preliminary assessment of the effects of a nurse-led aftercare intervention in supporting
HNC patients to enhance their life after chemoradiation. The holistic approach in enabling patients to take more control of their rehabilitation discussing the 14 domains of the SMW was highly valued. The intervention was found to be feasible and acceptable by the nurse as well as with the patients. Within the IG, medium effect sizes were found in QoL, although this could also be attributed to normal recovery during the first year after treatment. The intervention had no statistically significant effect on the patients between the IG and the HCG regarding HRQoL or self-management skills.

An aftercare intervention based on holistic principles implies a positive contribution to better personal care, which is important in supporting HNC patients’ self-management after their treatment. Recently, more nurse-led aftercare programs were evaluated in favor of self-management support. In addition, the possibilities of web-based or online programs to enhance self-management skills have been explored in patients with HNC. These online screening and monitoring tools were considered useful, and patients with HNC expressed interest in using online programs. However, computer-assisted supportive care and e-health programs are not feasible for all patients. For older and lower educated patients, personal counseling seems to be a more appropriate approach to address their specific needs. Furthermore, considering the impact of long-term adverse effects of HNC treatment such as speech difficulties, tinnitus, and negative emotional consequences, individual support seems more appropriate for patients in practicing active self-management skills.

All patients in the study found the broad spectrum of daily life areas important to discuss. The patients in the HCG indicated

Figure 3 - Flowchart inclusion.
that there was a lack of support for all domains, particularly regarding sexuality and shared decision making. For patients in the IG, almost all the domains that were deemed important were addressed by the NP during the intervention. However, shared decision making was less well implemented in daily practice. This topic is still an important theme to discuss, especially from the point of view of self-management strategies and considering patients have become more assertive in recent years. Attention was paid to the domain of illness-related knowledge. This agrees with Wilkie et al’s study, which concludes that treatment follow-up mostly focuses on physical aspects of recovery; however, this does not align with what is most important for the people concerned. Domains such as daily activities, sexuality, emotions, and spirituality are discussed less often (Figure 4). The importance of emotional and social topics in supportive care after treatment has also been emphasized in other studies. Consequently, there is a risk that the needs of patients with HNC are overlooked or unresolved and therefore can lead to a lack of appropriate care and to fewer referrals to other professionals as well. This implies that the current aftercare protocol needs to be reorganized on a more comprehensive base. Our study shows that

### Table 1 • Background Variables and Disease Characteristics

|                      | Intervention Group | Historical Control Group |
|----------------------|--------------------|-------------------------|
|                      | n = 27             | n = 28                  |
| Age, median (range), y | 62 (42–71)         | 62 (50–72)              |
| Gender, men, n (%)    | 23 (85)            | 18 (64)                 |
| Marital status, n (%) |                    |                         |
| Single               | 5 (19)             | 9 (32)                  |
| Living together      | 16 (59)            | 19 (68)                 |
| Missing              | 6 (22)             | 0                       |
| Cancer diagnosis, n (%) |            |                         |
| Oral cavity          | 1 (4)              | 4 (14)                  |
| Oropharynx           | 13 (48)            | 12 (43)                 |
| Hypopharynx          | 11 (41)            | 10 (36)                 |
| Nasopharynx          | 1 (4)              | 2 (7)                   |
| Other                | 1 (4)              | 0                       |
| Treatment type, n (%) |                    |                         |
| IMRT + CDDP          | 19 (90)            | 23 (82)                 |
| IMRT + cetuximab     | 2 (10)             | 5 (18)                  |

Abbreviations: CDDP, cisplatin; IMRT, intensity-modulated radiotherapy.

### Table 2 • Outcome Measurements

|                          | Intervention Group T0, n = 26 | Intervention Group T1, n = 21a | Historical Control Group N = 27 | P     | Effect Size |
|--------------------------|-------------------------------|--------------------------------|--------------------------------|-------|-------------|
|                          | Median (IQR)                  | Median (IQR)                   | Median (IQR)                    |       |             |
| EORTC QLQ-C30            |                               |                                |                                |       |             |
| Quality of life          | 79.2 (66.7–91.7)              | 83.3 (66.7–95.8)               | 83.3 (66.7–91.7)                | .86   | 0.11 0.01   |
| Physical functioning     | 93.3 (80.0–100)               | 93.3 (86.7–100)                | 86.7 (73.3–100)                 | .19   | 0.32 0.41   |
| Role functioning         | 83.3 (66.7–100)               | 83.3 (50.0–100)                | 100 (70.8–100)                  | .99   | 0.05 0.14   |
| Emotional functioning    | 87.5 (66.7–100)               | 91.7 (62.5–91.7)               | 83.3 (66.7–100)                 |       |             |
| Cognitive functioning    | 100 (83.3–100)                | 100 (91.7–100)                 | 83.3 (66.7–100)                 | .023  | 0.27 0.54   |
| Social functioning       | 83.3 (66.7–100)               | 100 (66.7–100)                 | 83.3 (66.7–100)                 | .94   | 0.12 0.13   |
| Symptom scores           | 12.8 (5.1–24.4)               | 9.0 (1.9–15.4)                 | 10.3 (5.1–23.1)                 | .53   | 0.48 0.31   |
| EORTC H&N 35             |                               |                                |                                |       |             |
| Pain                     | 16.7 (8.3–41.7)               | 8.3 (8.3–22.9)                 | 12.5 (0–27.1)                   | .97   | 0.51 0.18   |
| Swallowing               | 8.0 (33.3)                    | 4.2 (0–16.7)                   | 16.7 (0–43.8)                   | .16   | 0.24 0.43   |
| Sense problems           | 25.0 (12.5–33.3)              | 16.7 (8.3–33.3)                | 33.3 (50.0)                     | .42   | 0.24 0.34   |
| Speech problems          | 22.2 (11.1–33.3)              | 11.1 (11.1–27.8)               | 11.1 (33.3)                     | .78   | 0.06 0.12   |
| Trouble with social eating | 16.7 (8.3–41.7)         | 8.0 (0–25.0)                   | 29.2 (2.1–50.0)                 | .08   | 0.47 0.61   |
| Trouble with social contact | 0 (0–67)                   | 0 (0–6.7)                     | 0 (11–17)                      | .85   | 0.02 0.0   |
| Less sexuality           | 16.7 (58.3)                  | 0 (0–33.3)                    | 0 (33.3)                       | .85   | 0.35 0.15   |
| Teeth                   | 0 (0–33.3)                   | 0 (0–0)                       | 0 (33.3)                       | .051  | 0.64 0.60   |
| Opening mouth            | 0 (0–33.3)                   | 0 (0–33.3)                    | 0 (66.7)                       | .47   | 0.22 0.25   |
| Dry mouth               | 66.7 (33.3–66.7)             | 33.3 (33.3–66.7)               | 66.7 (33.3–100)                 | .54   | 0.75 0.18   |
| Sticky saliva            | 33.3 (33.3–75.0)             | 33.3 (50.0)                   | 33.3 (66.7)                     | .67   | 0.65 0.22   |
| Coughing                | 33.3 (33.3–66.7)             | 33.3 (33.3–33.3)               | 33.3 (33.3)                     | .51   | 0.33 0.12   |
| Felt ill                | 0 (0–33.3)                   | 0 (0–33.3)                    | 0 (0–0)                        | .14   | 0.05 0.32   |
| Self-management knowledge and behavior (PIH) |             |                                |                                |       |             |
| Knowledge and coping    | 6.6 (6.0–7.5)                | 7.0 (6.1–7.6)                 | 6.9 (5.9–6.9)                   | .35   | 0.29 0.18   |
| Recognition and management of symptoms, adherence to treatment | 7.4 (5.8–7.7) | 6.9 (5.4–8.0) | 7.6 (6–8.0) | .58 | 0.28 0.38 |
| Self-efficacy total score (SECD6) | 5.5 (3.4–7.3) | 7.0 (4.8–9.2) | 6.7 (4.0–8.0) | .26 | 0.15 0.29 |
| Patient-centered care (CAHPS) | 4.0 (3.8–4.0) | 4.0 (3.5–4.0) | 4.0 (3.6–4.0) | .708 | 0.62 0.35 |

Abbreviations: CAHPS, Consumer Assessment of Health Plan Surveys; CG, control group; EORTC QLQ-C30, European Organization for Research and Treatment of Cancer Quality of Life Questionnaire 30; H&N 35, Head and Neck 35 version; IG, intervention group; IQR, interquartile range; PIH, Partners in Health Scale; SECD6, Self-Efficacy for Managing Chronic Disease 6-Item Scale.

*EORTC QLQ-C30: no significant differences within the IG; †IG T0-T1, P = .045; ‡IG T0-T1, P = .022.

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the SMW can be used to implement a more holistic approach during the aftercare of the patients with HNC.

Another key element of the intervention was the advanced training in interview skills all involved NPs received. In the study of Been-Dahmen et al, the NPs reported that feedback about their skills helped them to improve their capability in conducting the interviews, which resulted in a significant improvement in delivered care between baseline and the intervention period.

**Figure 4** Importance of paying attention and actual paid attention of the domains of care.

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E444 | Cancer Nursing®, Vol. 45, No. 2, 2022

Braat et al
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