

Master Thesis

Evaluating the introduction of Positive Health on the amount of received home care nursing to older patients: a pre-post study

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English abstract

Title: Evaluating the introduction of Positive Health on the amount of received home care nursing to older patients.

Background: As older people continue to live at home longer, the demand for home care nursing increases. In terms of Positive Health (PH), home care focuses on strengthening the self-reliance and -management of the patient. Currently, there is a lack of evidence on the impact of the introduction of PH on health care consumption within a home care setting.

Aim: To assess the influence of the introduction of PH on the average amount of received home care nursing in minutes per week to home care patients over a period of six weeks.

Method: A pretest-posttest study was performed to compare the amount of home care in minutes per week over a period of six weeks. Two random samples were extracted from the Electronic Health Record within a health care organization in the Netherlands. Data of patients receiving home care pre-introduction of PH (2018) was compared to patients receiving home care post-introduction of PH (2020). Routinely collected health data was used and compared using a Mann-Whitney U test.

Results: In total, 352 patients, 176 patients per group, were included. Univariate analysis showed a significant difference in the received amount of home care ($p=0.005$). The median was significantly lower in the PH group (176.25, IQR=111.7-287.9) compared to the no-PH group (180.67, IQR=83.8-248.7). In addition, significant difference were observed in type and number of nursing diagnoses.

Conclusion and recommendation: Patients in PH group received a lower amount of home care compared to patients in the no-PH group. In addition, a lower number and type of nursing diagnoses were observed by home care patients in the PH group compared to the no-PH group. Keeping home care affordable, more research focused on the actual effects of PH in daily practice is needed, to be of value of the increasing demands of home care worldwide.

Keywords: Home Care Services, Nursing diagnoses, Older People, Positive Health, Self-management.

Nederlandse samenvatting

Titel: Evaluatie van de introductie van Positieve Gezondheid op de hoeveelheid ontvangen verpleging thuis bij oudere patiënten.

Achtergrond: Doordat ouderen langer thuis blijven wonen, neemt de vraag naar wijkverpleging toe. Bij Positieve Gezondheid (PG) richt de wijkverpleging op het versterken van de zelfredzaamheid en het zelfmanagement van de patiënt. Momenteel is er geen bewijs voor de invloed van de introductie van PG in termen van verbruik op de gezondheidszorg, binnen de wijkverpleging.

Doel: De invloed van Positieve Gezondheid beoordelen op de gemiddelde hoeveelheid wijkverpleging in minuten per week die thuiswonende patiënten ontvangen gedurende een periode van zes weken.

Methode: Een pretest-posttest studie is uitgevoerd om de hoeveelheid ontvangen wijkverpleging in minuten per week over een periode van zes weken te vergelijken. Binnen een Nederlandse zorginstelling zijn twee aselechte steekproeven uit het elektronisch patiëntendossier gehaald. Gegevens van patiënten die voor de introductie van PG wijkverpleging kregen (2018) werden vergeleken met patiënten die na de introductie van PG wijkverpleging kregen (2020). Routinematige verzamelde gezondheidsgegevens werd gebruikt en vergeleken met behulp van een Mann-Whitney U-test.

Resultaten: In totaal werden 352 patiënten, 176 patiënten per groep, geïnccludeerd. Uit univariate analyse bleek dat de groepen significant verschillen in de hoeveelheid ontvangen wijkverpleging ($p=0.005$). De mediaan was significant lager in de PG groep (176,25, IQR=111,7-287,9) dan in de niet-PG groep (180,67, IQR=83,8-248,7). Daarnaast, werd een significant verschil waargenomen in type en aantal verpleegkundige diagnoses.

Conclusie en aanbevelingen: Patiënten in de PG groep ontvingen minder hoeveelheid wijkverpleging dan patiënten in de niet-PG groep. Bovendien werden bij patiënten in de PG groep een lager aantal en type verpleegkundige diagnoses waargenomen in vergelijking met de niet-PG groep. Om de wijkverpleging betaalbaar te houden, is er meer onderzoek nodig naar de daadwerkelijke effecten van PG in de dagelijkse praktijk, om van waarde te zijn voor de toenemende vraag naar wijkverpleging wereldwijd.

Trefwoorden: Ouderen, Positieve Gezondheid, Verpleegdiagnoses, Wijkverpleging, Zelfmanagement.

Introduction

Today, the average age of the human population worldwide is rising rapidly (1). The number of older people, i.e. aged 65 years and older, is estimated to be 1.2 billion in 2025, increasing to 1.9 billion in 2050 (2,3). Approximately 92% of the independently-living older people want to remain in their current residence as active and to maintain a good quality of life (4-6). With aging, the prevalence of chronic diseases and disability in older people is increasing (7). Therefore, an increase in functional decline and often deterioration in multiple health domains, such as psychological and social problems, arise (7). As a result, the demand for home care will grow alongside with increasing costs (8,9).

In many countries, home care is organized and funded differently (10). Home care can be defined as formal nursing services and personal care provided by care providers in patients' own home (4). In the Netherlands home care includes personal, psychosocial and technical nursing care delivered by registered nurses, nursing assistants and specially trained nurses (11-13). These care providers deliver different types of care to various types of patients, such as the chronically ill people, disabled people, older people and people at the end of life (4,14). Thereby encompasses home care both long-term and short-term care at home, for instance after discharge from the hospital (4,14).

Nowadays, home care primarily focuses on improving and strengthening the self-reliance and self-management of older people (15). 'Empowering' older people living at home in need of home care and strengthening their self-reliance are in line with the new definition of health, defined as Positive Health (16,17). This new concept of health has been developed by experts at an international invitational conference and defined health as "the ability to adapt and to self-manage, in the face of social, emotional and physical challenges of life" (16). In contrast to the traditional World Health Organization definition, Positive Health describes health not as a stable endpoint, but rather as a continuum in light of functioning, resilience and self-direction (17). This definition emphasizes the potential to be or become healthy even when there is an illness (16). Although there is no blueprint for working with the concept of Positive Health in clinical practice, it requires a different way of thinking of patients and care providers (16). For example, conducting other types of conversations between patient and care provider and shared decision making with patients (17). Currently, no evidence has been reported how to apply Positive Health in home care and what the impact is on patient outcomes. However, strengthening the autonomy of the older people living at home showed their effects.

Several studies showed that older people who receive home care, value being able to make autonomous decisions and maintaining their autonomy despite their dependency (18-20). Furthermore, a study reported that patients with chronic illnesses who have learnt to manage their life better and to cope with their disease, experienced improved health, less

distress, less fatigue, more energy, and fewer perceived disabilities and limitations in social activities (21,22). These results also showed that managing their own lives influences patients' outcomes positively and a decrease in the demand for home care e.g. patient satisfaction, quality of care, amount and duration of home care (21,22). Thereby, evidence regarding chronic disease patients who live at home has shown that people who can successfully adapt to an illness, are also able to work or to participate in social activities and feel healthy despite their illness-related limitations (23).

Currently, there is a lack of evidence on the impact of the introduction of Positive Health, in terms of health care consumption, in a home care setting. To the best of our knowledge, no other studies have been reported on how the introduction of Positive Health influences the amount of home care received by older people living at home.

Aim

This study aimed to assess the influence of the introduction of Positive Health (PH) on the average amount of received home care nursing in minutes per week to home care patients over a period of six weeks.

Method

Design

An observational study was performed using a pretest-posttest study design. Two random samples were extracted from the Electronic Health Record (EHR) within a health care organization in the Netherlands. Data of patients receiving home care before the introduction of PH (Jan-Feb 2018) was compared to patients receiving home care after the introduction of PH (Jan-Feb 2020). Routinely collected health data was used from the EHR, which is defined as health data collected for purposes other than research (24). Given the fact that routinely collected health data was used, this study was regarded as an observational study (25). A pretest-posttest design was preferred, considering possible effects of a type of treatment are seen on a group of people (25).

Population and setting

The study population consisted of older people, i.e. aged 65 years and older, living at home, receiving home care delivered by a large health care organization in the east of the Netherlands. The organization provides home care nursing to approximately 6,000 patients by approximately 1,700 care providers and covers eleven neighbourhood areas. Each area consisting of five to twelve district teams. Each district team consists of seven to fifteen

registered nurses and 20 to 40 certified nursing assistants, each taking care of approximately 60 home care patients.

The inclusion criteria to participate in this study were: [1] being a new patient within home care, to ensure a clear starting point for measuring and comparing the two groups; and [2] having received home care for a minimum period of six weeks, to prevent the comparison was a snapshot in time.

To avoid bias, the following patients were excluded (25). First, patients who received home care in both time windows (no-PH and PH). Second, patients with a nursing-home indication or patients who only received home care from a specially trained nurse (i.e. wound or oncology nurses). These patients were excluded while they concerned a specific population (around 1%) with different care problems and care demands (11,12).

Sampling

Patients were selected by simple random sampling, giving each patient an equal chance of being chosen (25). A power calculation was performed to determine the required sample size. Since no previous research has been conducted on this topic, the possible impact was estimated based on a small practical pilot within the participating health care organization. During this explorative pilot of six months, one group of 60 home care patients was evaluated on the amount of received home care pre- and post the introduction of PH. The estimated effect size in this study was based on a 30% reduction of the received amount of home care in minutes per week as observed in the pilot study. The sample size is calculated in G*Power [3.1], with an estimated effect size of 0.3, an α error probability of 0.05, and a power of 0.80, using an independent t-test. A minimum of 176 patients was required in each group. Taking two groups into account, a total minimum number of 352 patients was estimated.

Intervention: the introduction of Positive Health

In 2009, a new definition of health was launched during a two-day invitational conference, and later published, which outlined the concept of PH (23). The concept of PH consists of six broad health dimensions of life rather than focusing only on the weakness of the patient (18). The focus is on a patient's strength and on empowering the patient in what matters most, to stimulate the self-reliance and self-direction of the patient (17). The six dimensions in which the older people were empowered are: 1) bodily functions, 2) mental functions and perceptions, 3) spiritual dimension, 4) quality of life, 5) social and societal participation, and 6) daily functioning (16).

The participating health care organization introduced PH conform to the three-steps guideline, developed by the Netherlands Organization for Health Research and Development (ZonMw) as shown in Figure 1 (26). Since January 2019, all nurses in the home care of the

participating organization have been trained and supported in introducing PH, which has been set as a standard in their thinking and acting. The training and support was not based on a fixed implementation plan, the introduction of PH mainly had a diffuse course. Methods to train the nurses were: information meetings, case discussions between the nurses and peer reviews. Today, this development is still ongoing. The concept of PH is considered as the 'new' usual care for the nurses in home care in the participating organization.

[**Figure 1:** The embraced three steps of Positive Health in the participating health care organization]

Data collection and parameters

Two random samples of patients were extracted anonymously between February and April 2020 and from the Electronic Health Record (EHR) of the health care organization. All data was extracted by the first author (YKH) in collaboration with the head care controller of the participating health care organization. Baseline data such as age, gender and residential district were collected when a patient was admitted for home care. The primary outcome was the average amount of received home care nursing to home care patients measured in minutes per week during a period of six weeks from first start of home care.

In addition, patient characteristics such as nursing diagnoses at the first care plan were also collected to give more insight in the actual influence of PH. Nursing diagnoses are the basis for assessing effective nursing interventions and can help achieve and clarify specific outcomes, such as the amount of home care (27). Since 2015, Dutch registered nurses with a bachelor's degree (also called District Nurses, DN) perform the formal needs assessment and organize the required home care (13,28). A DN organizes home care following the nursing process (13,28). In the nursing process, the DN assessed the patient's nursing diagnoses using a classification system (13,28). The participating health care organization has integrated the Omaha System into the EHR for assessing the nursing diagnoses. The Omaha System is a classification system for home care nursing to determine an assessment, intervention and evaluation (29). The nursing diagnoses were described following the Omaha System of Problem Classification Scheme, and consist of four domains: environmental, psychosocial, physiological, and health-related behaviours (29). These four domains comprise 42 nursing diagnoses (29).

Data analysis

Between April and June 2020, the groups no-PH and PH were compared by YKH. Data was analyzed using the Statistical Package for the Social Sciences (SPSS) 24 software (Armork, New York, USA). Continuous variables were presented with means and standard deviation in the case of normal distributed data, or with medians and interquartile ranges (IQR) when data was non-normally distributed. Discrete variables were expressed as counts and percentages. There was no missing data. Outliers were included in the study, since such errors can occur in daily practice. Baseline data were analyzed using descriptive statistics. To assess the normality of the data, histograms and Q-Q plots were visually checked in advance. Two-sided p-values ≤ 0.05 were considered statistically significant.

The primary outcome was measured as a continuous parameter. Since the data was not normally distributed, univariate analysis with the Mann-Whitney U test was used to test the comparison in the average amount of received home care between the no-PH and PH group (25). The groups were considered independent, because each group was composed of an independent set of patients, with no inherent relationship derived from repeated measures or matching (25).

When statistical analysis showed a significant difference between PH and the amount of received home care, the actual influences of PH were further examined in more detail using nursing diagnoses. Separate descriptive statistics and univariate analysis were used to compare the two groups (no-PH and PH) on the number and type of nursing diagnoses as stated in the first care plan, using the Omaha system. Comparison with non-normally distributed variables was performed with the Mann-Whitney U test and the categorical variables with the Chi-square test or Fisher's exact test for data with low numbers (25).

Ethical considerations

This retrospective study was officially approved on 12 February 2020 by the Medical Research Ethics Committee (MREC) Utrecht (Protocol ID: 20-062/C). The MREC concluded that the Medical Research Involving Human Subjects Act (WMO) did not apply to this study. All data were collected using routinely collected health data and were in accordance with the most recent version of the principles of the Declaration of Helsinki (version 7, October 2013) (30). The handling of personal data complies with the EU General Data Protection Regulation and the Dutch Act on Implementation of the General Data Protection Regulation (in Dutch: Uitvoeringswet AVG, UAVG) (31). Retrospective written informed consents were not required, because anonymous routinely collected health data was used. Traceable customer numbers were recorded in a digital codebook, which together with the study data was only accessible with a password held by YKH.

Results

Patient and baseline characteristics

In total 352 home care patients, 176 patients per group, were included, conform the sample size calculation. Patients' demographic characteristics are presented in Table 1. The average age of the patients was 78.5 years (SD \pm 7.1) in the no-PH group, and relatively similar in the PH group with 78.6 years (SD \pm 7). More than half of the patients in both groups were female (no-PH: n=113; 64.2%, PH: n=98; 55.7%). The participating health care organization has eleven neighbourhood area's and these were all included in both groups.

[**Table 1:** Baseline characteristics of the patients]

Positive Health versus the amount of home care

Univariate analysis showed that the group of no-PH and PH differ significantly in the received amount of home care ($p = 0.005$). The identified significance on the median was lower in the PH group (176.25, IQR = 111.7-287.9) compared to the no-PH group (180.67, IQR = 83.8-248.7). Outliers, expressed in a higher amount of home care, were only showed in the no-PH group compared to no outliers in the PH group (4 patients versus 0 patients). Table 2 shows the average received amount of home care per week and over a period of six weeks between no-PH and PH. From week three to week six, the median amount of home care per week were significantly lower in the PH group compared to the no-PH group (week 3: 200 vs 142.5, $p = 0.009$; week 4: 172.5 vs 135.5, $p = 0.013$; week 5: 140 vs 90, $p = <0.001$ and week 6: 132.5 vs 75, $p = <0.001$).

[**Table 2:** Univariate analysis for differences in received amount of home care pre- and post-introduction of Positive Health]

Positive Health and Nursing diagnoses

Table 3 shows the number and type of nursing diagnoses between the two groups. When comparing the two groups, more nursing diagnoses were found in the no-PH group compared to the PH group (n=433 versus n=202). The median difference between the number of nursing diagnoses per patient between no-PH group (2, IQR = 1-3) and PH group (1, IQR = 1-1) was statistically significant ($p = <0.001$). Patients of the no-PH group were diagnosed with more and with different types of nursing diagnoses than the patients in the PH group (27 versus 18 nursing diagnoses). A maximum number of ten nursing diagnoses was assessed in the no-PH group (one patient; 0.6%) versus four nursing diagnoses in the PH group (one patient; 0.6%).

A total of 276 domains were observed as a result of the perceived nursing diagnoses in the no-PH group compared to 188 domains in the PH group. Patients in both groups had one median number of domain observed per patient, the IQR per patient was different between the two groups (IQR = no-PH: 1-2, PH: 1-1), which resulted in a statistical significance ($p = <0.001$). One patient in the no-PH group (0.6%) perceived nursing diagnoses in all four domains and none of the patients in the PH group perceived nursing diagnoses in all four domains. Furthermore, a significant lower difference was shown in the PH group compared to the no-PH group between three of the four domains. The environmental domain showed no significance ($p = 0.469$), yet the psychosocial domain ($p = <0.001$), physiological domain ($p = <0.001$) and health related behaviors domain ($p = <0.001$) did.

[**Table 3:** Data of Nursing diagnoses pre- and post-introduction of Positive Health]

Discussion

This pretest-posttest study aimed to assess the influence of the introduction of PH on the average amount of received home care nursing in minutes per week to home care patients over a period of six weeks. Consistent with the hypothesis, the results showed that PH influences the received amount of home care. From week three till week six, the median amount of home care per week was significantly lower post-introduction of PH compared to pre-introduction of PH. Overall, post-introduction of PH identified a significantly lower amount of home care in minutes per week over the period of six weeks than pre- introduction of PH. Furthermore, a lower statistically significant difference in the numbers and types of nursing diagnoses were observed in the PH group compared to the no-PH group.

To the best of our knowledge, this study is the first to report outcomes of PH in home care nursing, since no studies have been conducted before. Findings of this study on patients managing their own lives are in line with earlier studies. Lorig et al. studied a self-management intervention by people living at home with a chronic condition (21). Stimulating self-management had positive effects, improving health behaviors, self-efficacy, and health status, while decreasing health care consumptions (21). In addition, the study reported other side effects of a self-management intervention such as reducing the number of emergency room visits (21).

Studies by Ory et al. and Ahn et al. also showed significant improvement with better health outcomes from self-management intervention. (32,33). Some health outcomes were for example, better self-reported health and fatigue and better communication between care provider and patient (32,33). Also reported Ory et al. and Ahn et al. a reduction in hospitalizations and emergency room visits (32,33). Remarkably, a meta-analysis by

Panagioti et al. mentioned that there were indeed improvements in health outcomes, however these outcomes were small (34). The greatest effects were found in patients with diabetic, respiratory, cardiovascular, and mental health conditions (34). Thereby, appointed Panagioti et al. that only a minority of self-management support interventions reported reductions in health care consumption in association with decrements in health (34).

This study has several strengths. First of all, to our knowledge this study is the first that examined the influence of the introduction of PH in home care nursing, based on current practice using recent patient files. Secondly, the study is in line with social developments surrounding the main challenges worldwide when it comes to growing demands of health care and the search for effective means to fulfill this demand (35). Finally, a strength in this study was that it had been able to include a large sample size relatively easily by using routinely collected health data. The large sample size contributed to valid conclusions and sufficient power, however the use of routinely collected health data is still used limited in research (25).

Several limitations should be taken into consideration. First, it is unclear to what extent PH had been introduced in practice and to what extent it had been applied by nurses in daily practice. The introduction in the participating organization had been diffuse and had not been followed according to a specific implementation plan, which may have affected the results in this study (36). Secondly, a limitation of this study is the pre-post design which threatened the internal validity on selection- and attrition bias. This design provided no evidence of equivalence of groups before treatment (25). Therefore, this design was used only in an exploratory capacity, where it may serve to generate hypotheses for future testing (25). Finally, this study is limited to the external validity. The use of a pre-post design and the fact that it had been studied within one organization in the east of the Netherlands resulted in this study is being difficult to generalize.

The exact nature of the influence of PH is not yet clear because of the exploratory nature of this study. Further research on the effectiveness is needed to identify the actual influence of PH. To exclude influences other than PH, the generalizability, randomization and implementation of the intervention according to a strict guideline have to be taken into account (37,38). For instance, a systematic way of development and evaluation of complex interventions such as PH is important for good implementation and effectiveness in everyday practice (37,38). In addition, deeper and detailed insight into the influence of the nursing diagnoses should be studied. For instance, it is unclear whether practice variation of the nurses in home care influences the assessed nursing diagnoses of the patient and whether these may influence the amount of received home care.

Conclusion

The findings of the current study showed that patients post-introduction of PH received a lower amount of home care nursing in minutes per week over a period of six weeks compared to patients who received home care pre-introduction of PH. In addition, a lower number and type of nursing diagnoses were observed by home care patients in the group post-introduction of PH compared to the group pre-introduction of PH. These first conclusions about the influence of PH, can contribute to further research to be of value in the increasing demands of home care worldwide and promoting quality of care in terms of keeping home care sustainable and affordable.

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Figures and tables

Step	Purpose	Action
1	Stimulate self-awareness.	Ask the patient to think about their own needs and request help based on the six dimensions. Ask if the patient is able to do daily things, such as the household tasks.
2	Conduct the other conversation	Based on the results of step 1, ask questions such as: What is really important to you? What would you like to change? What makes you happy?
3	Coaching on action perspectives	Discuss who or what can help the patient to change the current situation or fulfil their needs

Figure 1: The embraced three steps of Positive Health in the participating health care organization

Table 1
Baseline characteristics of the patients

	No Positive Health group ¹ (N=176)	Positive Health group ² (N=176)
Demographics		
Age (years), mean (SD ³)	78.5 (7.1)	78.6 (7)
minimum / maximum	65 97	65 96
Gender, n (%)		
Female	113 (64.2)	98 (55.7)
Male	63 (35.8)	78 (44.3)
Residential district ⁴ , n (%)		
Neighbourhood 1	8 (4.5)	6 (3.4)
Neighbourhood 2	23 (13.1)	23 (13.1)
Neighbourhood 3	14 (8)	26 (14.8)
Neighbourhood 4	26 (14.8)	9 (5.1)
Neighbourhood 5	15 (8.5)	18 (10.2)
Neighbourhood 6	14 (8)	17 (9.7)
Neighbourhood 7	11 (6.3)	18 (10.2)
Neighbourhood 8	14 (8)	19 (10.8)
Neighbourhood 9	15 (8.5)	11 (6.3)
Neighbourhood 10	15 (8.5)	7 (4)
Neighbourhood 11	21 (11.9)	22 (12.5)

¹ Patients with home care in 2018. ² Patients with home care in 2020. ³ SD: Standard Deviation.

⁴ Anonymous neighborhood area (Wijgro) where the patient received home care within the participating health care organization.

Table 2

Univariate analysis for differences in received amount of home care pre- and post-introduction of Positive Health

	No Positive Health group ¹ (N=176)		Positive Health group ² (N=176)		P-value ³
Amount of home care⁴, median (IQR⁵)					
Week 1	197.5	(120-320)	205	(111.3-294)	0.556
Week 2	210	(105-333.8)	177.5	(95-318.3)	0.105
Week 3	200	(95-320)	142.5	(70-258,8)	0.009
Week 4	172.5	(86.3-313.8)	135.5	(60-250)	0.013
Week 5	140	(70-270)	90	(40-218.8)	<0.001
Week 6	132.5	(60-268.8)	75	(30-175)	<0.001
Average over 6 weeks	180.7	(111.7-287.9))	176.3	(83.8-248.7)	0.005

¹ Patients with home care in 2018. ² Patients with home care in 2020. ³ Tested with Mann-Whitney U test, bold values are statistically significant. ⁴ Primary outcome in minutes per week at first start of care plan. ⁵ IQR: Interquartile Range ranged Q1 and Q3.

Table 3

Data of Nursing diagnoses pre- and post-introduction of Positive Health

	No Positive Health group ¹ (N=176)		Positive Health group ² (N=176)		P-value
Nursing diagnoses					
Number of nursing diagnoses per patient ³ , median (IQR ⁴)	2	(1-3)	1	(1-1)	<0.001 ^a
Number of nursing diagnoses in total per group, n (%)	443	(251.7)	202	(114.8)	
Number of different types of nursing diagnoses per group, n (%)	27		18		
Number of nursing diagnoses per amount of nursing diagnoses, n (%)					
1 – 3	141	(80.1)	175	(99.5)	
4 – 6	31	(17.6)	1	(0.6)	
7 – 10	4	(2.4)	-		
Number of present domains per patient ⁵ , median (IQR)	1	(1-2)	1	(1-1)	<0.001 ^a
Number of present domains per group in total, n (%)	276	(156.8)	188	(106.8)	
Number of present domains per amount of domain, n (%)					
1	92	(52.3)	165	(93.8)	
2	69	(39.2)	10	(5.7)	
3	14	(8)	1	(0.6)	
4	1	(0.6)	-		
Type present domain ⁶ (yes), n (%)					
Environmental domain	11	(6.3)	7	(4)	0.469 ^b
Psychosocial domain	25	(14.2)	2	(1.1)	<0.001 ^b
Physiological domain	94	(53.4)	132	(75)	<0.001 ^c
Health related behaviors domain	146	(83)	47	(26.7)	<0.001 ^c

Table 3 continued*Data of Nursing diagnoses pre- and post-introduction of Positive Health*

	No Positive Health group ¹ (N=176)	Positive Health group ² (N=176)
Type nursing diagnoses ⁷ (yes), n (%)		
Environmental domain		
Neighborhood/workplace safety	6 (3.4)	6 (3.4)
Residence	4 (2.3)	1 (0.6)
Sanitation	1 (0.6)	-
Psychosocial domain		
Caretaking/parenting	10 (5.7)	-
Grief	5 (2.8)	-
Mental health	11 (6.3)	-
Role change	2 (1.1)	2 (1.1)
Physiological domain		
Bowel function	9 (5.1)	7 (4)
Circulation	21 (11.9)	23 (13.1)
Cognition	11 (6.3)	8 (4.5)
Communicable/infectious condition	2 (1.1)	-
Consciousness	1 (0.6)	-
Digestion/hydration	4 (2.3)	5 (2.8)
Hearing	4 (2.3)	-
Neuro/musculo/skeletal function	24 (13.6)	56 (31.8)
Oral health	3 (1.7)	-
Pain	6 (3.4)	5 (2.8)
Respiration	4 (2.3)	7 (4)
Reproductive function	-	1 (0.6)
Skin	28 (15.9)	16 (9.1)
Urinary function	5 (2.8)	10 (5.7)
Vision	9 (5.1)	2 (1.1)
Health related behaviors domain		
Health care supervision	85 (48.3)	9 (5.1)
Medication regime	59 (33.5)	20 (11.4)
Nutrition	19 (10.8)	-
Personal care	97 (55.1)	21 (11.9)
Physical activity	12 (6.8)	3 (1.7)
Sleep and rest patterns	3 (1.7)	-

¹ Patients with home care in 2018. ² Patients with home care in 2020. ³ Nursing diagnoses as diagnosed by a home care nurse in the first care plan of the EHR following Omaha System of the participating health care organization. ⁴ IQR: Interquartile Range ranged Q1 and Q3. ⁵ Domains which comprised the assessed nursing diagnoses. ⁶ The four domains among which includes the nursing diagnoses within the Omaha system. ⁷ The four domains with the comprised assessed nursing diagnoses (a total of 42 nursing diagnoses are possible) ^a Tested with Mann-Whitney U test. ^b Tested with Fisher's Exact test. ^c Tested with Chi-square test.