



Defining practice variation and exploring influencing factors on needs assessment in home care nursing: A Delphi study

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Funding information

V&VN, Dutch Nurses Association on behalf of the Dutch Ministry of Health, Welfare and Sport

Abstract

Aim: To describe a Delphi study regarding practice variation in needs assessment by Dutch home care nurses, to define practice variation in home care nursing and explore which factors may have a role in this needs assessment.

Design: A Delphi study was conducted with the participation of home care representatives.

Method: A Delphi questionnaire was developed, preceded by literature research and an expert meeting. The Delphi study took place between December 2020 and February 2021. The goal was to achieve a consensus level of at least 70%.

Results: After three rounds, 32 experts reached a consensus about definitions regarding variation in needs assessment, warranted and unwarranted variation. In total, 59 factors were determined related to (1) the client and health, (2) the clients' context, (3) nurses and (4) the nurses' context. Thirty-four factors scored warranted of influence and 18 (of 34) were client related. Most of the factors that scored unwarranted influencing needs assessment (17 of 26) were related to the home care nurses' context.

Conclusion: Having a consensus about the definition of practice variation in needs assessment and possible influencing factors support the professionals to discuss and improve the unity and quality of their decision-making process in home care. This may contribute to more righteous care for clients in need of home care.

Impact: Since 2015, home care nurses in the Netherlands are responsible for determining the amount, type and duration of care for clients in need of home care. This so-called needs assessment legitimizes the payment by health insurers. Signals of practice variation in needs assessment are heard in home care field. Although practice variation may be justified, it can lead to over or underuse of care, which may affect clients' outcomes. If we can identify influencing factors and find patterns that contribute to practice variation, we might gain a better understanding of the process and improve home care.

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Patient or public contribution: In this study, there was no patient or public involvement. Client representatives were included in this research as experts in the home care field, and they participated in three rounds of the Delphi study. They contributed by sharing their expert opinion on the definitions presented and the factors possibly influencing needs assessment.

KEYWORDS

care quality, Delphi, home care, needs assessment, nursing, practice variation

1 | INTRODUCTION

In Europe, a substantial increase in individuals aged 65 and over is anticipated, that is, from 20.2% of the total European population in 2019 to 30.8% in 2080 (Eurostat, 2021). Deinstitutionalization is necessary to cope with the increasing demand for healthcare caused by an ageing population with multiple chronic conditions and their wish to continue living in a familiar place (Kringos et al., 2015). In the Netherlands in 2020, 20% of the population was aged 65 or over, and 20% of them received home care (Eurostat, 2021). Consequently, in most European countries, nurses are expected to deliver more care at home (Spasova et al., 2018). Governments and care organizations have anticipated future challenges by developing a vision of home care, taking initiatives to facilitate it and assuring equal access for all clients in need (Genet et al., 2012).

In 2015, the Dutch government decided to extend the responsibilities of home care nurses to strengthen the gateway to more expensive forms of intramural care such as nursing home care and hospital care. They increased the authority of bachelor-educated home care nurses by making them responsible for access to home health care based on a basic benefits package of obligatory health insurance for which no out-of-pocket payment for home care clients is necessary (Van Den Bulck, 2022). To determine whether a client is eligible for paid access to home care, these home care nurses specify needs assessment, as part of the nursing process, in terms of the amount, type and duration of care needed. Home care nurses alongside general physicians—as both groups have generalist knowledge of live-at-home clients—connect with professionals from various disciplines and invest in preventing the health of people with chronic conditions from deteriorating. They organize and deliver care for people in their own homes to make ageing in a familiar comfortable space possible (Genet et al., 2012).

In most European countries, home care nursing concerns integrated nursing, personal care and any kind of technical nursing care in the homes of the recipients (Van Eenoo et al., 2018). In the Netherlands, caretakers of different educational levels, such as helpers, vocationally trained carers and bachelor-educated nurses deliver home care (Van Den Bulck, 2022). To assess needs, nurses with a generalist approach have to be bachelor educated according to the requirements stated in the Six Standards Framework of the Dutch Professional Nursing Association developed to support the implementation of home care nurses' responsibility (V&VN, 2014).

Because these nurses determine access to home care, several representatives of the home care field—for example, insurers and patient representatives—have reported variations of practice (Zwakhalen et al., 2019). A small previous study confirmed a variation in the indicated hours per week and nursing diagnoses by different home care nurses in an identical client case (Van Dorst et al., 2017). These signals alongside the published research suggest that in apparently similar situations, clients in need of home care receive a different amount, type and duration of care. Subsequently, practice variation may be problematic because it may be a sign of under or overuse of care and may undermine the principle of equal access and quality of care as formulated by the Institute of Medicine (IOM, 2001). To determine whether this variation in needs assessment is a hazard to the quality of home care, more knowledge is necessary regarding the definition of practice variation in needs assessment and the factors that may influence this needs assessment.

2 | BACKGROUND

Conducting a needs assessment is a systematic part of the nursing process that serves as a guide for all nursing actions to deliver client-centred care (Rosendal, 2019; V&VN, 2019). Following the nursing process is one of the norms in the Six Standards Framework (V&VN, 2014). The nursing process is a systematic professional method based on critical reasoning and available scientific evidence (Müller-Staub et al., 2009; Rosendal, 2019). It starts by assessing relevant information about the client's health status. Followed by diagnosis to determine nursing interventions after setting healthcare goals and then indicate the hours needed for the planned interventions. The last step in the nursing process concerns evaluating the results of the interventions taken and, if needed, adjusting the care plan to reach the goals together with the client (Gordon, 1995).

In the literature, there are multiple general definitions of practice variation originating from medical care. Kievit et al. (2015) described practice variation as 'the extent to which health suppliers differ in the frequency and/or way in which care is offered to clients with similar care problems' (Kievit et al., 2015). However, there is a difference between warranted and unwarranted practice variation (Wennberg, 2002). In his research, Wennberg (2002) defined practice variation as being warranted when 'the variation is caused by the nature, or seriousness of the disease, or preferences of the patient' (Wennberg, 2002). Practice variation could be warranted if,

for example, a patient has a medical condition that requires medical treatment, but the patient chooses otherwise because of possible negative consequences of the proposed medical treatment. Clients are unique and have different preferences, and their client support networks vary largely. Providing client-centred care may, therefore, justify the variation in delivered care. However, practice variation is unwarranted when the variation in care provision cannot be explained by the client's medical condition or preferences. An example is the case of organizational differences in care provision because some organizations are mainly money-driven, and others may be more focused on client-centredness and, thus, client care needs. Consequently, home care clients of the money-driven organisation may receive more care than needed. Unwarranted variation can even result in harmful care provision and is a burden for society in terms of societal costs (Wennberg, 2002).

Although practice variation in needs assessment in home care nursing is a rather understudied area, it is not a new topic in medical professions. The first study on practice variation in patients undergoing a tonsillectomy was conducted in 1938 (McPherson, 2008). Existing reviews by Corallo et al. (2014) and Paul-Shaheen et al. (1987) showed that medical practice variation exists and confirmed large variations across regions and settings for almost all medical procedures (Corallo et al., 2014; Paul-Shaheen et al., 1987).

Previous research, mainly in medical professions, has focused on possible causes of practice variation. The factors found at different aggregation levels, (micro, meso and macro) might contribute to practice variation (Brabers et al., [under review](#)). The micro level includes a wide variety of factors concerning the patients' characteristics, medical conditions and/or preferences. The meso level, which comprises the patients' environment, including the social context of the patient and/or whether family members live close by, influences practice variation (Greer et al., 2002). In addition, the micro level of the individual care provider includes individual choices based on experiences rather than the use of available guidelines as well as specific education and training, which are possible factors that influence practice variation (Brabers et al., [under review](#)). At the meso level, factors like team culture and team norms might have an influence. At the macro level, the availability of evidence, guidelines and resources (such as personnel and technology) play a role. These factors have been frequently mentioned in the literature as causes of practice variation (Brabers et al., [under review](#)). According to Greer et al. (2002), the professional use of evidence and guidelines to choose medical treatment may conflict with the patient's values and preferences and thus may cause practice variation (Greer et al., 2002). The macro level includes influencing factors related to the health system and its structure and institutions including out-of-pocket payments or the density of care providers in a region. De Jong et al. (2015) described a sociological model for understanding medical practice variation and showed that factors interact, and therefore, may influence each other (De Jong, 2015).

Although all these factors may also be relevant for home care nursing, the majority of the literature was on medical practice variation (Brabers et al., [under review](#)). A recent editorial by Brabers et al. (2019)

shows that research on practice variation in needs assessments conducted by home care nurses is scarce (Brabers et al., 2019). Cowley et al. (2000) already mentioned the existence of practice variation in needs assessment two decades ago, but only very few studies have been reported on possible influencing factors (Cowley et al., 2000). Possible influencing factors in literature specific to needs assessment in home care, are the clients' context, the ability of self-reliance and self-direction, and living circumstances as well as time shortage for home care nurses to accomplish their tasks. In addition, the various ways in which classifications are used and interpreted to assess client needs may also be an influencing factor (Van Dorst et al., 2017).

Currently, a definition of practice variation in needs assessment in home care nursing is lacking. Defining it is crucial because variation may lead to unequal care and hence, affect the quality of care provided. Identification of the potential influencing factors at the client, nurse and environment level enables a better understanding of practice variation and provides guidance for interventions to reduce it in home care nursing. At this moment, practice variation in needs assessment is an understudied area, leaving us with many questions. As a first step to gaining insight into this underexplored area, we focus on clearly defining the concept of practice variation in home care nursing and exploring which factors may have a role in this needs assessment.

3 | THE STUDY

3.1 | The aim

The aims of this Delphi study were (1) to establish a definition of practice variation in needs assessment by home care nurses and determine when it is warranted and unwarranted, and (2) to explore which factors may have a role in this needs assessment according to various stakeholders (including government representatives, client representatives, insurers and care workers) in the home care field.

4 | METHOD

4.1 | Design

The Delphi study is part of a larger research programme. In the current study, we focus on defining practice variation in needs assessment, both warranted and unwarranted, and identifying influencing factors. The research programme aims to investigate the presence of practice variation in needs assessment by home care nurses and will eventually develop interventions to reduce possible unwarranted practice variation.

A Delphi survey was conducted between December 2020 and March 2021. The Delphi technique is a widely used method to reach a consensus among experts by using several rounds of feedback collection. It investigates and understands factors that influence a specific

TABLE 1 Overview of all factors and sources.

1. Broad literature search:	Client-related factors: 12	Professional-related factors: 39	Total= 51
2. Small literature search:	7	26	33
3. Expert meeting:	7	26	33
4. Cases provided by insurance companies:	9	0	9
5. Feedback round:	0	0	0
Excluding doubles	11	18	29
The total amount of factors	24 client-related factors	73 professional-related factors	97 factors

issue, topic or problem (Hasson et al., 2000). In the current study, an online modified Delphi survey was conducted to elicit the opinions of a panel of experts via several non-in-person rounds to reach a consensus level of 70% (established a priori) on the proposed definitions of practice variation (warranted and unwarranted). In addition, the potentially influential factors were presented to the panel to investigate if and how they influence needs assessment. The target group of this study was 9000 home care nurses with bachelor registration (NLQF level 6 stands for Dutch Qualification Framework level 6). Before the start of the Delphi survey, a literature review was conducted to identify scientific papers that describe definitions of practice variation and influencing factors. The results (definitions and factors determined) of this study were used as a starting point when designing the Delphi survey.

4.2 | Participants

In this Delphi study, a panel of experts (panellists) was recruited. Experts were defined as people with demonstrable experience and or knowledge on the subject under study, such as representatives of clients living at home, experts from home care practising nurses, policymakers, health insurers, quality assurance, nursing teachers and researchers who were otherwise involved in researching the field of home care. Potential panellists were approached via the Dutch Professional Nursing Association (V&VN), the so-called Scientific Table for home care nursing (V&VN, 2022) via the members of The Head Line Agreement 2019–2022 group (HLA), and via a call in a professional journal (De Groot et al., 2020).

Panellists who showed interest in contributing to the study were selected based on convenience sampling (Hasson et al., 2000). Generally, a minimum of 10 panellists is considered sufficient for a Delphi study depending on the number of questions asked, although a larger group of panellists reduces the risk of error and improves the reliability of the results (Hasson et al., 2000). Therefore, and because of the convenience sampling, we invited 47 panellists for each round and aimed for a minimum of 30 panellists (Hasson et al., 2000).

4.3 | The Delphi questionnaire

A Delphi questionnaire was developed especially for this study. It included three literature-derived definitions (Kievit et al., 2015; Wennberg, 2002). These definitions were presented in the first

Delphi round, and they defined practice variation and warranted and unwarranted practice variation.

1. Practice variation is the way healthcare providers differ in the frequency and manner in which they offer care to clients with similar care problems (Kievit et al., 2015).
2. Practice variation is warranted if caused by the nature or the severity of the disease or the preferences of the client, especially in situations where there are clinically comparable effective options (Wennberg, 2002).
3. Practice variation is unwarranted if not caused by the nature or severity of the disease or the preferences of the client, especially in situations where there are clinically comparable effective options (Wennberg, 2002).

In addition to the definitions, the Delphi study included possible influencing factors. These factors were based on triangulated sources, namely, an extensive scoping review on practice variation and influencing factors (Brabers et al., under review), an expert meeting, and case descriptions received from the Dutch Association of Health Insurers (Zorgverzekeraars Nederland in Dutch). In Table 1, an overview of 97 influencing factors is presented, which were detected from various resources (an overview of all factors and sources is available and can be requested from the authors by email). Initially, these factors were judged by the research group to decide if the derived items met the following definition of a factor influencing needs assessment. A factor influencing the needs assessment is a measurable element or circumstance that directly influences the client or the home care nurse into determining the care need in home care nursing within the legislation of health insurance policy (ANW, 2022; V&VN, 2019).

Factors that did not meet this definition were eliminated from this list of possible influencing factors and were not included in the Delphi questionnaire. To avoid possible misinterpretation of factors during the Delphi study, the factors were clearly formulated in a sentence structure. No additional context was provided in the sentences to prevent influencing the choices of experts. Finally, 58 factors were included in the Delphi study. Following Elissen et al. (2017), the researchers divided the factors into four categories (Elissen et al., 2017). The first category corresponding to the micro level of the client included the client- and health-related factors. The second category corresponding to the meso level of the client included the clients' context-related factors. The third category, corresponding to the micro level of the nurse, included the home care nurse-related

factors. Finally, the fourth category, corresponding to the meso level of the nurse, included the home care nurse context-related factors. (Elissen et al., 2017). These factors were presented in the Delphi study and judged by a panel of experts on if (yes, no or I do not know) and how (very warranted, warranted, neutral, unwarranted or very unwarranted) they influence the needs assessments. In addition, the panellists were given the option to add missing factors.

4.4 | Data collection and procedure

The questionnaire included two parts: the three definitions of practice variation and the influencing factors. The first round took place during the first half of December 2020, and the second and third rounds occurred in January and February 2021 respectively (Table 2). Each Delphi round took approximately 1 month to execute the survey—including sending out two reminder emails (after 1 week and 1 day before closure), analyse the results and complete a new survey by including the collected comments, before sending out the next round. All questions required an answer in order to be able to complete the survey. This response, analysis, feedback and response process were repeated until the panellists reached the a priori consensus level of 70%. It took three rounds to reach this consensus level.

4.4.1 | First Delphi round

The first Delphi round started with the informed consent procedure; the participants were asked to provide background information about their age, sex, job title and organization. Then, the panellists were presented with the definitions. Subsequently, they were asked to report on a 5-point Likert scale whether they totally agreed, agreed, neutral, disagreed or totally disagreed with the proposed definition. In addition, they were invited to formulate alternatives and make suggestions to possibly redefine the definition in an open text box. After each definition, the panellists were offered the possibility for suggestions and remarks.

4.4.2 | Second Delphi round

In the second round, after collecting informed consent and demographic information, the refined definitions were presented to the

panellists. The panellists then rated each definition and provided feedback as described for the first Delphi round. Besides the definitions, influencing factors on needs assessment were presented in this round. Panellists were asked to judge whether they considered each factor as being influential by answering yes, no or I do not know. Finally, panellists could add missing factors.

4.4.3 | Third Delphi round

In this round, after collecting informed consent and demographic information, the refined definitions were presented to the panellists. The panellists then rated each definition and provided feedback as described for the first and second Delphi rounds. In addition, a new, redefined overview of influencing factors, based on the analyses in the second round, was presented. In this round, the panellists were asked to score the presented factors on a 5-point Likert scale whether they considered the factors very warranted, warranted, neutral, unwarranted or very unwarranted in the way they influence the needs assessment. Questionnaires of all three Delphi rounds are available and can be requested from the authors by email.

4.5 | Data analysis

Data were collected using Qualtrics® XM and subsequently imported into SPSS® version 27 for data analysis. The responses of each round were summarized, and the level of agreement was analysed using descriptive statistics. The results of the analyses obtained from the panellists' remarks on each definition and influencing factor in the previous round were presented again to the panellists in the following round. In between rounds, a summary of the results with the most given remarks and the consensus rate on the definitions were presented to the panellists in the introduction of the questionnaire for the next round. For example, the amount and type of comments suggesting the use of specific words in the definition were presented to the panellists. In this way, substantiation of adjustments in definitions and a list of influencing factors supported the panellists in their response for the next round.

After the last Delphi round, how the factors influence needs assessment was analysed using Qualtrics® XM, reports, and the number and percentages of panellists scoring very warranted to very unwarranted.

TABLE 2 Timeframe and contents of Delphi rounds.

	Content of Delphi questionnaire	When
First round	Rating three definitions of practice variation, warranted practice variation, and unwarranted practice variation	11 December 2020–26 December 2020
Second round	Rating the three adjusted definitions of practice variation. Rating which factors are influencing variation in the needs assessment	6 January 2021–24 January 2021
Third round	The final rating on the three adjusted definitions of practice variation. Rating which factors are influencing practice variation on needs assessment in a warranted or unwarranted way	16 February 2021–28 February 2021

4.6 | Ethical approval

All panellists were informed that participation was voluntary and that all data would be processed anonymously and used only for research purposes. The study did not fall under the scope of the Dutch Medical Research Act (WMO). This study was conducted in accordance with the principles of the Declaration of Helsinki.

5 | FINDINGS

5.1 | Participants

In total, 45 of the 47 invited panellists (96%) completed the first round of the Delphi study. The average age of the panellists was 44 years, and 86% of them were women (Table 3). The panellists consisted of home care nurses ($n=22$), nursing teachers ($n=10$), client representatives ($n=5$), nurse associations ($n=2$), insurers ($n=3$), policymakers ($n=1$) and government representatives ($n=2$). In rounds 2 and 3, the same 47 panellists were invited again to fill in the questionnaire. During rounds 2 and 3, the response declined to 82% ($n=39$) in round 2 and 68% ($n=32$) in round 3. In the third round, 68% ($n=32$) of the panellists completed the Delphi questionnaire. Most of the participants who dropped out were home care nurses and nursing teachers. The response in the other groups, such as policymakers, client representatives, nurse associations, insurers and government representatives, was the same.

5.2 | Definitions of practice variation and influencing factors

The findings of the three rounds are presented per round. The first round included the three definitions, the second round included the three definitions and influencing factors, and the third round included the results of the definitions as well as the influencing factors. Table 4 shows the development of the definitions in the three Delphi rounds based on analysis and adjustments of the remarks, and finally, the adapted definitions included the consensus rate on practice variation in needs assessment by home care nurses, warranted practice variation and unwarranted practice variation.

TABLE 3 Panellists' response per Delphi round

Participants	Round 1	Round 2	Round 3
Home care nurses	22	15	13
Client representatives	5	6	6
Policymakers	1	1	1
Insurers	3	3	2
Association of nurses	2	2	2
Nursing teachers	10	10	6
Representatives from government	2	2	2
Invited ($n=47$) and response	45 (96%)	39 (83%)	32 (68%)

5.2.1 | First Delphi round

The first round resulted in 35 remarks on the definition of practice variation in needs assessment and a consensus rate of 68.9%. The remarks concerned the usage of different terms as well as missing words to further explain the terms used. By using the word 'client' instead of 'patient', the definition catered to a more nurse-oriented phrase. 'Healthcare providers' have been changed to 'home care nurse'. The frequency and manner in which they offer care have become the nature, amount and duration of care. On the definition of warranted practice variation, there were 31 remarks and a consensus rate of 46.7%, and on the definition of unwarranted practice variation, there were 27 remarks and a consensus rate of 44.4%. In both definitions, remarks were made about the importance of the clients' context, using 'client' instead of 'patient', and replacing 'clinically comparable' and remarks about nurses who need to substantiate their decisions. In addition, the panellists remarked about the scarcity of available proven interventions in home care nursing, and therefore, these words were removed from the definitions and replaced with 'achieving goals'. Based on the remarks, the definitions were adjusted and proposed again in the second Delphi round.

5.2.2 | Second Delphi round

In the second round, the three redefined definitions were presented, and in addition, the factors of influence were presented to the panellists. In round 2, 29, 22 and 18 remarks were made about the three refined definitions respectively (Table 2). Most of the remarks concerned the terminology used—for example, providing care, recovering, well-being and content of care. The relevance of these remarks to the scope of the definition led to replacing the words 'practice variation' in definitions two and three with 'variation in needs assessment' to clarify the scope. The consensus rate for the first, second and third definitions was 66.7%, 82.1% and 74.4% respectively.

In round 2, the possible factors of influence ($n=58$) were presented in four categories as shown in Table 5. The panellists reported the following three missing factors: clients' living circumstances, the insurance companies' influence and the organization being money driven. In addition, one factor categorized under the clients' personal- and health-related factors (the client's capacity for self-reliance) was extended with the words and self-direction. Finally, the factors of clients' and home care nurses' gender were found to be irrelevant by the panellists and were, therefore, removed from the Delphi list of possible influencing factors.

5.2.3 | Third Delphi round

In round 3, a survey was disseminated including the three redefined definitions and the adjusted list of influencing factors. In round 3, panellists reached a consensus on all three definitions, 100% on the definition of practice variation on needs assessment, 90.7% on warranted

TABLE 4 Development of the definitions, remarks and consensus throughout the Delphi study.

	Round 1	Round 2	Round 3
Participants	45 (of 47) completed	39 (of 47) completed	32 (of 47) completed
Definition 1	Practice variation is the way healthcare providers differ in the frequency and manner in which they offer care to patients with similar care problems	Use client instead of patient. Add the nature, extent, frequency and duration of care and by whom given. The context of the client and the process of decision-making by the home care nurse. Use the word care professionals instead of healthcare providers	Practice variation is the extent to which home care nurses differ in the frequency, manner in which, time, and duration of the care that is indicated and delivered to clients with similar client situations focusing on activities that contribute to health and lead to recovery
Consensus %	68.9%	31 remarks about: 66.7%	29 remarks about: 100%
Definition 2	Practice variation is warranted if this is caused by the nature or the severity of the disease or the preferences of the patient, especially in situations where there are clinically comparable effective options	The context of the client is missing, use of client instead of patient, efficiency, quality of life and traceable decision-making. Replacing clinically comparable	Variation in needs assessment is warranted if caused by clients' characteristics, context and preferences with regard to achieving goals that are taken into account by the home care nurse in a professional, substantiated decision-making process
Consensus %	46.7%	27 remarks about: 82.1%	18 remarks about: 90.7%
Definition 3	Practice variation is unwarranted if it is not caused by the nature or severity of the disease or the preferences of the patient, especially in situations where there are clinically comparable effective options	The context of the client, replace clinically. Use client instead of patient. There are only a few proven effective interventions in home care nursing. Traceable decision-making is missing	Variation in needs assessment is unwarranted if not caused by clients' characteristics, context and preferences of the client with regard to achieving goals that are taken into account by the home care nurse in a professional, substantiated decision-making process
Consensus %	44.4%	74.4	87.6

TABLE 5 Categories with added, adjusted or removed influencing factors on variation in the needs assessment.

Four categories	Presented factors round 2 (n = 58)	Presented factors round 3 (n = 59)	Added or adjusted factors (+) and/or removed factors (-)
1. The personal client- and health-related factors	15	14	-The clients' gender. The clients' capacity for self-reliance and self-direction (adjusted)
2. The clients' context-related factors	6	7	+The clients' living circumstances
3. The personal home care nurse-related factors	13	12	-The home care nurses' gender
4. The home care nurses' context-related factors	24	26	+The insurance companies' influence +The organization is money driven
Total	58	59	

practice variation on needs assessment, and 87.6% on the definition of unwarranted practice variation on needs assessment. On the influencing factors, the panellists scored 34 of the total 59 factors influencing needs assessment as warranted. The majority of these 34 factors (n=18) were client related. Most of the factors (17 of 26) scored as unwarranted were related to the home care nurses' context. More specifically, these include not only factors such as the organisation being money driven and the insurance companies' influence but also the size of the organisation and the workload of the team workers. In contrast, the availability of guidelines and standards in an organization and the availability and dissemination of scientific evidence at a national level are scored warranted to influence needs assessment. Several factors are undecided such as the home care nurses' attitudes and beliefs as well as the client's age and education level. Three panellists expressed difficulty and uncertainty in scoring some of the factors warranted or unwarranted. The light green-coloured factors in Table 6 show more or less undecided scores distributed over warranted, neutral and unwarranted to influence needs assessment. They referred to specific situations in which it could be both. They scored neutral in these cases.

6 | DISCUSSION

After three Delphi rounds, the experts reached an agreement on the operational definitions of practice variation and warranted and unwarranted variation in needs assessment in home care nursing. In addition, they identified 59 possible influencing factors, categorized according to Elissen et al. (2017), whose influence could be warranted, neutral or unwarranted (Elissen et al., 2017). In category 1, personal client- and health-related factors, most factors (11 of 14) were warranted to influence needs assessment, and in category 2, one of seven client context-related factors were unwarranted to influence needs assessment. In category 3, personal home care nurse-related factors, 5 of 12 factors were unwarranted to influence needs assessment. Finally, in category 4, home care nurse context-related factors, 17 of 26 were unwarranted to influence needs assessment. This study gives us a better understanding of practice variation in needs assessment in home care nursing and whether it is warranted or unwarranted, according to the panel of experts.

All three definitions of practice variation, warranted and unwarranted are constructed using words that are more appropriate for home care nursing than the words used in the definitions of Kievit and Wennberg (Kievit et al., 2015; Wennberg, 2002). If we look at the definitions, we see a different use of words to formulate the meaning of the concepts than in the medical practice variation. We started the Delphi study with Kievit's definition: 'Practice variation is the way healthcare providers differ in the frequency and manner in which they offer care to patients with similar care problems' (Kievit et al., 2015). We conclude it with the knowledge that 'variation in needs assessment is due to the way in which the home care nurses differ in the nature, amount and duration of care they assess for clients in similar situations'. Wennberg's definition states that 'practice variation is warranted if it is caused by the nature or the severity of the disease or the preferences of the patient, especially in situations where there are options with clinically comparable effects' (Wennberg, 2002). 'Variation in needs assessment is warranted if it is caused by the clients' characteristics, context and preferences with regard to achieving goals that are taken into account by the home care nurse in a professional, substantiated decision-making process'. Compared to Wennberg's definition, there is a difference in the words used in this study's definition of warranted practice variation in needs assessment—'home care nurses' instead of 'healthcare providers', 'client' instead of 'patient', and 'client situation' instead of 'care problems' (Wennberg, 2002). The stakeholders in the home care field needed these terms to make the definitions more specific and thus acceptable. Furthermore, in addition to the medical condition of the client, the client's characteristics, context and preferences are also noted to provide a broader, more holistic scope of the client. Therefore, these aspects are integrated into the three definitions of practice variation in a needs assessment. These adjustments can be explained by the fact that home care is given in the clients' own environments, and thus, this is an important aspect to take into account, as Brabers also stated earlier (Brabers et al., under review). Moreover, using different terms than medical ones allow the nursing profession to develop into a more autonomous profession for supporting clients' living-in-place with home care needs. On the other hand, different vocabulary can be an obstacle to inter-professional communication, for example, when

TABLE 6 Influencing factors rated by scores on the agreement in the way they influence the needs assessments by home care nurses per category (darker coloured means stronger agreement on the influencing manner of the factor on needs assessment).

Category	Completed response (n = 32)	(Very) warranted number (%)	Neutral number (%)	(Very) unwarranted number (%)
1. The personal client- and health-related factors (n = 14)	The presence of complications or risk of complications of diseases for a client	32 (100)	–	–
	The clients' functional status	31 (97)	1 (3)	–
	The clients' capacity for self-reliance and self-direction	31 (97)	–	1 (3)
	The clients' ability to manage his or her own health	30 (94)	–	2 (6)
	The clients' capacity to learn	29 (91)	2 (6)	1 (3)
	The number of clients' nursing diagnoses	25 (78)	5 (16)	2 (6)
	The clients' preferences, wishes and needs	24 (74)	4 (13)	4 (13)
	The number of medical diagnoses a client has	21 (66)	9 (28)	2 (6)
	The clients' history of care use	3 (10)	11 (34)	18 (56)
	The clients' medication use	16 (50)	15 (47)	1 (3)
	The clients' income and financial possibilities	7 (22)	8 (25)	17 (53)
	The clients' level of education	13 (41)	9 (28)	10 (31)
	The clients' age	13 (41)	11 (34)	8 (25)
	The clients' ethnicity or cultural background	12 (37)	8 (25)	12 (38)
2. The client's context-related factors (n = 7)	The resilience of the clients' social network (think of the capacity and residual strength of the clients' network involved)	31 (97)	–	1 (3)
	The availability of a clients' network (think of friends, volunteers, acquaintances, possibly school and employer)	30 (94)	1 (3)	1 (3)
	The reliability of a client's network (such as making structural agreements about taking on necessary care activities)	30 (94)	1 (3)	1 (3)
	The availability of other disciplines that are involved in the client's care (e.g., domestic help, physiotherapist, occupational therapist, supervisor, etc.)	24 (75)	5 (16)	3 (9)
	The clients' living circumstances	21 (66)	8 (25)	3 (9)
	The region where a client lives	5 (16)	8 (25)	19 (59)
	The expectations of the client's social network (informal caregivers) with regard to care that the client needs and receives	14 (44)	7 (22)	11 (34)
3. The personal home care nurse-related factors (n = 12)	The experienced workload of the home care nurse	2 (6)	1 (3)	29 (91)
	The home care nurses' age	1 (3)	4 (13)	27 (84)
	The knowledge about and application of new technologies (think of video calling, medication dispensers)	23 (72)	1 (3)	8 (25)
	The knowledge about guidelines, standards and scientific evidence of the home care nurse	22 (69)	2 (6)	8 (25)
	Keeping up with the profession through training and refresher courses by the home nurse	22 (69)	2 (6)	8 (25)
	The expectations of other professionals think of referrers such as general practitioners, colleagues, and transfer nurses, for example, with regard to the assessment of the home care nurse	8 (25)	3 (9)	21 (66)
	The home care nurse's ability to self-reflect	18 (56)	4 (13)	10 (31)
	The home care nurse's competencies	19 (59)	5 (16)	8 (25)
	The responsibility felt by the home care nurse in their role as a home care nurse	18 (56)	3 (9)	12 (35)
	Having completed specialized home care nurse training	16 (50)	8 (25)	8 (25)
	The years of experience of the home care nurse	7 (22)	10 (31)	15 (47)
	The home care nurse's attitude and beliefs	13 (40)	5 (16)	14 (44)

TABLE 6 (Continued)

Category	Completed response (n = 32)	(Very) warranted number (%)	Neutral number (%)	(Very) unwarranted number (%)
4. The home care nurses' context-related factors (n = 26)	The organization is money driven	1 (3)	1 (3)	30 (94)
	The insurance companies influence	1 (3)	2 (6)	29 (91)
	The organization is supply driven	1 (3)	3 (9)	28 (88)
	The size of the organization.	4 (13)	3 (9)	25 (78)
	The organization works with freelancers	1 (3)	6 (19)	25 (78)
	The workload felt by the team workers.	3 (9)	4 (13)	25 (78)
	The organization only offers specific care (e.g. personal budget care, care already paid for, specialized care) or is of a more general nature	-	8 (25)	24 (75)
	The availability and dissemination of scientific evidence at a national level	23 (72)	2 (6)	7 (22)
	The availability of guidelines and standards in an organization	23 (72)	2 (6)	7 (22)
	The type of care provided by the organization is contracted or (partially) uncontracted care	2 (6)	8 (25)	22 (69)
	The policy of the organization stimulates and creates space for home care nurses for their decision-making	21 (66)	2 (6)	9 (28)
	The organization of home care has salaried employees	6 (19)	5 (16)	21 (65)
	The organization offers education possibilities	20 (62)	4 (13)	8 (25)
	The availability of technological tools in the organization.	19 (59)	5 (16)	8 (25)
	The competencies, skills, expertise, knowledge, learning attitude and experience of the team members	19 (59)	5 (16)	8 (25)
	The social norm within the team (think of how do we do things in our team, following the leader)	7 (22)	7 (22)	18 (56)
	The presence of multiple care providers of home care in the region	4 (13)	11 (34)	17 (53)
	The presence of different kinds of care providers in the region (think of care provided by municipalities, psychiatric care, assisted living arrangements)	17 (53)	8 (25)	7 (22)
	The organization's culture.	11 (34)	4 (13)	17 (53)
	The organization of home care is centrally organized	4 (12)	12 (38)	16 (50)
	The organization has sufficient staff available	16 (50)	6 (19)	10 (31)
	The willingness of an organization to change	16 (50)	3 (9)	13 (41)
	The internal audits that are carried out by an organization itself	13 (41)	4 (12)	15 (47)
The external audits an organization receives	11 (34)	6 (19)	15 (47)	
The continuity of personnel deployability or capacity of personnel available	13 (40)	5 (16)	14 (44)	
The home care organization is self-managing or self-organizing	8 (25)	10 (31)	14 (44)	

client information needs to be transferred from the hospital to home care or vice versa. Notwithstanding the use of these terms, client-centeredness becomes very much a part of the definitions of warranted and unwarranted practice variation in needs assessment and follows the Institute of Medicine and the central role of the nursing profession (IOM, 2001; Rosendal, 2019).

Several factors are more or less undecided about the way they influence needs assessment. The light green-coloured factors in Table 6 show that, sometimes, scores are equally distributed over warranted, neutral and unwarranted influences. It demonstrates that a factor that has warranted influence in some cases may have unwarranted influences in different circumstances. For example,

on the one hand, a nurse might think that a shortage of personnel (i.e. the factor *the organization has sufficient staff available*) indicates less home care for a client because there is simply not enough staff to provide care to all clients that need it. Therefore, this nurse finds the influence of the factor *the organization has sufficient staff available* warranted. On the other hand, another nurse might find that the indicated amount of care should be independent of *the number of staff available*, making the influence of this factor unwarranted. More research is necessary to investigate the presence of social mechanisms and whether they cause practice variation in the needs assessment by home care nurses (De Jong, 2015).

Nurses all over the world are educated to perform needs assessments as part of the nursing process. However, the performance of these assessments is varied across countries. Hence, influencing factors on needs assessment might also vary among countries. For example, in the Netherlands, home care nurses need at least a bachelor's degree to allow them to conduct a needs assessment in which the preferences of the client are also considered. Moreover, home care providers are allowed to choose a nursing classification system—which forms the basis of the needs assessment—possibly causing variations in needs assessments. In Belgium, a standardized BelRAI assessment is obligatory to assess client's needs, and only the outcome of this assessment is covered by insurance. There is no bachelor's degree needed for the use of the BelRAI. Thus, daily practice involves a more inter-professional approach to care assessment (RAI, 2022). Furthermore, client-related factors such as the client's preferences and wishes play no role in this assessment and therefore, do not influence the needs assessment. In addition, there is no variation caused by the use of different assessment instruments by nurses. In Germany, an independent organization is responsible for assessing the clients' needs. Therefore, the nurse context-related factors probably have less influence on needs assessment. This confirms that the governmental vision on home care influences practice variation at the macro level (Van Eenoo et al., 2016). Whether there is practice variation in needs assessment between professionals of different educational levels, who are working together in a team is unknown. The competencies, skills, expertise, knowledge, learning attitude and experience of the team members may be influencing factors. Consequently, additional research might be relevant to identify how the impact of factors might differ because of differences in the home care context. The broad range of influencing factors including various categories, as provided in this Delphi study, could form a good basis for this endeavour, although adding factors should not be ruled out.

The nursing process consists of various connected phases: diagnostics (clients' nursing problems), goalsetting (based on client's possibilities and circumstances) and planned interventions to reach the client's goals (Müller-Staub et al., 2009). Before deciding the amount and nature of care that is needed, the home care nurse might consider referring to and/or collaborating with other care professionals. If the home care nurse refers (partly) to another professional, the number of home care hours indicated would diminish, whereas the necessity for coordination of care will increase (Karam et al., 2021). As a result, the influencing factor, for example, the presence of different kinds of care providers in the region, is warranted influencing needs assessment. In this case, by inter-professional collaboration, we assume the client receives the best possible care, and that client goals are reached in less time by thorough interventions, while using fewer hours of home care. From an inter-professional and client-centred care perspective, collaborating with other professionals might be the best choice. However, according to D'Amour et al. (2008), inter-professional collaboration is necessary but not naturally and certainly not easy (D'Amour et al., 2008). As Karam et al. (2021) state, 'the higher the complexity of clients' needs, the

higher the need for more multi-disciplinary and specialized interventions' (Karam et al., 2021). In addition, this increases the necessity for coordination of care and support of clients' decisions (Légaré et al., 2013). However, because work pressure and shortage of staff are factors that influence all care workers at present, this may also influence collaboration possibilities. Nevertheless, future challenges like more complex client situations and fewer available healthcare professionals, implicate more focus on integrated care through inter-professional collaboration (Karam et al., 2021). Although conducting a needs assessment in the Netherlands is a mono-disciplinary intervention reserved for the generalist home care nurse, the outcome of needs assessment often leads to inter-professional collaboration and coordination where the (complex) needs of the client are the central focus (Karam et al., 2021). Therefore, the home care nurse needs to collaborate inter-professionally and possess knowledge about other professionals' expertise in the first phases of the nursing process.

The use, assimilation and availability of evidence and guidelines by the organization are scored as warranted to influence needs assessments in home care nursing. This is consistent with the existing literature, in which authors have often mentioned the use and availability of evidence and guidelines as influencing factors on practice variation. In her scoping review, Brabers et al. (under review) found that the use of evidence and guidelines might reduce practice variation because it leads to greater uniformity and predictable interventions by professionals (Brabers et al., under review). However, we have to consider more perspectives on this subject. First, nursing science has little evidence on which to base its guidelines; therefore, the existing guidelines are mostly based on consensus (De Groot et al., 2021). Second, Geense et al. (2013) and De Groot et al. (2021) state that existing guidelines are not always found, are not available or are not applied by home care nurses (De Groot et al., 2021; Geense et al., 2013). Third, according to Boyd et al. (2005), most evidence-based guidelines that support professional decisions focus on managing a single client problem, while most clients in need of home care have comorbidity conditions (Boyd et al., 2005). Thus, knowing about the minimal applicability of guidelines in cases where clients have more than one problem, knowing that most home care clients suffer from more than one problem, consequently means that the use of guidelines probably makes no difference in the variation in needs assessment by home care nurses. Therefore, the influence of the use of guidelines may be overrated in home care provision. To understand the decision-making process of the home care nurse, it would be interesting to gain more insight into the motivations of home care nurses for ignoring the use of guidelines in case of complex client situations. Their motivation may be related to the fact that the available guidelines do not apply in cases where multi problems need to be addressed (Boyd et al., 2005).

6.1 | Strengths and limitations

This study has several limitations, including the sampling and selection of experts, the non-in-person sessions, and the response rate in

the various Delphi rounds. Experts that participated had a heterogeneous background. Subsequently, a few experts had no experience in conducting needs assessments. However, we do not think this has strongly influenced our findings, as they do have expertise in home care and the group was rather small. Nevertheless, the results had a broad support base within the stakeholder's representatives and the clinical practice of the home care nurses. Furthermore, some panelists reported uncertainty about their comments and scoring factors influencing needs assessment in a warranted or unwarranted way. By using the non-in-person method in this Delphi study, we missed the opportunity to discuss this uncertainty together with the factors that were scored undecided by the panellists. Not being able to discuss feelings of uncertainty may have affected the results and panellists may have scored more neutral on some factors. Another limitation is that the response rate in the Delphi rounds dropped from 45 experts in round 1 to 32 experts in round 3. This is a common phenomenon in Delphi studies, due to the required commitment in multiple rounds by the experts (Hasson et al., 2000). In our study, home care nurses, in particular, participated less in the second and third Delphi rounds compared to the first round. The dropout in this group may be a result of the Covid-19 pandemic, in which home care nurses generally experienced high work pressure (Veldhuizen et al., 2021). This high work pressure may have affected the panellists' interpretation and scores on several nurse context-related factors such as 'team workers' workload' and 'sufficient staff available'. Moreover, the last Delphi round was sent out during a vacation period, a factor that may have affected the dropout of home care nurses. Nevertheless, the final sample in round 3 was more than the initial set of a minimum of 30 experts.

6.2 | Future directions

With this Delphi study, the first part of a greater research programme, including an extensive literature review and the expert meeting has concluded. By defining practice variation in needs assessment and identifying influencing factors, the research continues with determining the nature and amount of practice variation in needs assessment by home care nurses in actual practice. Client files will be investigated to get insight into the amount and nature of existing variation and influencing factors present. In addition, more qualitative methods, for example, interviewing home care nurses, will offer insight into the possible interaction of influencing factors and variation. This insight is necessary to develop interventions during the last part of the research program, which will enable home care nurses to reduce unwarranted variation and thereby improve the quality, equality and accessibility of clients in need of home care.

7 | CONCLUSION

Up until now, there was little knowledge about the meaning of practice variation in needs assessment in home care nursing. By

conducting this Delphi study, we determined definitions and influencing factors regarding practice variation in needs assessment for home care nurses and added knowledge on this subject to the profession.

AUTHOR CONTRIBUTIONS

All authors have agreed on the final version and meet at least one of the following criteria (recommended by the ICMJE): (1) substantial contributions to conception and design, acquisition of data or analysis and interpretation of data; and (2) drafting the article or revising it critically for important intellectual content. SZ, NB, JdJ, AB, MS and JvD made substantial contributions to conception and design, or acquisition of data or analysis and interpretation of data; given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content; and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. SZ, JdJ, AB, MS and JvD involved in drafting the manuscript or revising it critically for important intellectual content.

ACKNOWLEDGEMENTS

The authors thank all participants, home care nurses, client representatives, nursing teachers, researchers, representatives from the government, policymakers and insurers for contributing to this study by sharing their expert opinions and reaching a consensus on the research subjects.

FUNDING INFORMATION

This study is part of a research project funded by the Dutch Nurses' Association (V&VN) on behalf of the Dutch Ministry of Health, Welfare and Sport. The funding bodies did not play a role in the study design, the writing of the manuscript or the decision to submit the manuscript for publication.

CONFLICT OF INTEREST STATEMENT

No conflict of interest has been declared by the authors.

PEER REVIEW

The peer review history for this article is available at <https://www.webofscience.com/api/gateway/wos/peer-review/10.1111/jan.15680>.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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How to cite this article: Van Dorst, J. (I. E., Schwenke, M., Bleijenberg, N., De Jong, J. D., Brabers, A. (E. M., & Zwakhalen, S. M. G. (2023). Defining practice variation and exploring influencing factors on needs assessment in home care nursing: A Delphi study. *Journal of Advanced Nursing*, 79, 3426–3439. <https://doi.org/10.1111/jan.15680>

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