

# BMJ Open Self-Management Analysis in Chronic Conditions (SMACC) checklist: an international consensus-based tool to develop, compare and evaluate self-management support programmes

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## ABSTRACT

**Objectives** The Self-Management Analysis in Chronic Conditions (SMACC) checklist was developed as a guidance tool to support the development, comparison and evaluation of self-management support programmes for persons with a chronic condition. The checklist was based on a previously performed concept analysis of self-management. The aim of this study was to validate its content using an international Delphi study and to deliver a final version.

**Design** A two-round Delphi study was conducted between October 2022 and January 2023. Using the researchers' networks, professionals with research or clinical expertise in self-management support and chronic conditions were recruited via online purposive snowball sampling. Participants were asked to score each item of the checklist (16 items total) on 3 content validity indicators: (1) clarity and comprehensibility, (2) relevance and importance and (3) degree of alignment with the overall goal of the checklist to promote adequate and comprehensive self-management support programmes. A consensus threshold of 75% agreement was used. The participants were also asked general questions about the checklist as a whole and were asked to provide feedback considering its refinement.

**Results** Fifty-four professionals with an average 14.5 years of experience participated in round 1, 48 with an average 12.5 years of experience participated in round 2. The majority of professionals were from Western Europe. For the majority of items consensus was reached after round 1. In round 2, 3 of the 4 remaining items reached consensus, 1 last item was retained based on highly recurring feedback.

**Conclusions** The SMACC checklist was considered a valid and comprehensive tool to aid the development, evaluation and comparison of self-management support programmes.

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The Delphi study included a diverse group of international healthcare professionals with research and/or clinical expertise in self-management support and chronic conditions, with an average of 14.5 years of experience in round 1 and 12.5 years in round 2.
- ⇒ The study used a combination of quantitative and qualitative methods to validate and improve the content of the checklist.
- ⇒ A limitation of the study is that the majority of expert participants were from Western and Northern European countries, with a high concentration from Sweden and Belgium.
- ⇒ We did not include patients in this study.
- ⇒ The primary focus was on leveraging the expertise and objectivity of healthcare providers and researchers, building on the evidence-based theoretical foundations identified in the concept analysis, before proceeding with patient validation.
- ⇒ Additionally, some included health-specific vocabulary could be difficult to understand for non-professionals.

It was acknowledged as a useful instrument to supplement existing frameworks and was seen as feasible to implement in both research and clinical settings. Further validation in the field, with input from patients and peer experts, will be valuable.

## INTRODUCTION

When looking at the demographic and epidemiological transition worldwide, healthcare stakeholders are confronted with an

increase in chronic conditions and multimorbidity.<sup>1 2</sup> Chronic conditions, generally defined as medical conditions lasting longer than 6 months, are among the most prevalent health problems globally and are the leading cause of death worldwide.<sup>3</sup> Current estimates suggest that nearly three-quarters of all deaths worldwide are caused by chronic conditions and approximately one-third of the population is affected by at least one chronic condition, and this trend is projected to only continue to rise in the future.<sup>4</sup> Additionally, some authors have projected multimorbidity to affect nearly half of the population by 2050.<sup>5</sup> High-quality medical research typically enables patients and clinicians to manage single chronic conditions, but if diseases coincide, dissonant advice regarding the treatment of different diseases can arise.<sup>6</sup> In addition, fragmentation of care and polypharmacy are also likely to arise, which can result in unclear care trajectories.<sup>7 8</sup> As a consequence, both patients and healthcare professionals can experience high levels of treatment burden and risk getting lost in the myriad of disease-specific recommendations.<sup>9</sup> With chronic conditions and multimorbidity increasingly becoming the rule and no longer the exception, a new way of thinking about healthcare delivery has become increasingly emphasised, particularly since the advent of the Chronic Care Model in the 1990s.<sup>10–12</sup> This new way of health-system-thinking focuses more on how people adapt to the consequences of the disease, in collaboration with a pro-active team, rather than pursuing a static ‘ideal of health’.<sup>13</sup> Simultaneously, the escalating economic burden of chronic conditions on healthcare systems worldwide has stimulated a growing demand for support interventions that can alleviate this economic strain.<sup>14</sup> As a result, there is a growing emphasis on empowering patients to manage the physical/biomedical aspects of their condition and the psychosocial consequences, with self-management support emerging as a crucial potential solution.<sup>15</sup>

So far, self-management support is increasingly advocated in a multitude of chronic conditions and for a variety of outcomes, including quality of life, self-efficacy, depression, anxiety, activities of daily living, medication adherence and others, and this across different populations and age groups.<sup>14 16–21</sup> Yet, its operationalisation and implementation has remained ambiguous, as seen through the wide array of employed interventions, ranging from education to counselling programmes, skill-training programmes, cognitive-behavioural programmes, tailored physical activity programmes and comprehensive programmes combining different features, among others.<sup>22 23</sup>

To help professionals in providing adequate self-management support, and to assess and support self-management strategies people with a chronic condition use to manage their everyday life, two existing tools can be employed: the ‘Practical Reviews in Self-Management Support’ (PRISMS) taxonomy and the ‘Taxonomy of Everyday Self-management Strategies’ (TEDSS).<sup>24 25</sup> The PRISMS taxonomy, consisting of 14 components, is a tool

that professionals can use to support self-management for people with chronic conditions. It provides, for instance, information about the delivery mode, intensity, frequency and duration of the intervention. The PRISMS was developed through multiple systematic reviews and a stakeholder workshop, after which it was validated with cancer survivors.<sup>24</sup> On the other hand, the TEDSS provides an overview of self-management strategies that people with chronic conditions use to manage their condition in daily life across seven domains. It can be used to guide interventions aimed at supporting everyday self-management strategies.<sup>25</sup> Currently, however, no checklist exists to assess or confirm whether an existing programme possesses all the essential attributes to qualify as a self-management support programme and ensure the inclusion of all necessary concepts, which could be used alongside existing tools and frameworks.

In a previous research project, our research group performed a concept analysis which resulted in a definition of self-management as ‘*the intrinsically controlled ability of an active, responsible, informed and autonomous individual to live with the medical, role and emotional consequences of their chronic condition(s) in partnership with their social network and the healthcare provider(s)*’.<sup>26</sup> Additionally, 10 attributes which should be taken into account when developing a self-management support programme were identified and organised into three groups: group (A) person-oriented attributes: an optimal programme should empower the individual to (1) actively take part in the care process; (2) be able to take a degree of responsibility for the care process and (3) have a positive way of coping with adversity. Group (B) person-environment-oriented attributes: throughout the intervention (4) the person must be informed about their condition, the disease and its treatment, and opportunities regarding self-management; (5) individual goals concerning self-management should be identified, expressing personal needs, values and priorities; (6) a reciprocal partnership with healthcare providers should be strived for and this (7) within a social context ensuring support. Finally, group (C) encompasses the summarising attributes: one should bear in mind that (8) self-management is a lifetime task; (9) which requires certain personal skills whose acquisition should be strived for in any intervention and (10) self-management encompasses the three domains of medical management, role management and emotional management.<sup>26</sup>

With practical implementation in mind and in light of recent literature citing the 10 attributes as a potential foundation for the development of self-management support interventions,<sup>27</sup> we synthesised the attributes into a checklist: the ‘Self-Management Analysis in Chronic Conditions (SMACC) checklist’ (see the online supplemental appendix for the final version based on this study). With this checklist, our aim was to provide a tool that provides content guidance for both clinicians and researchers looking to develop, compare or evaluate guided self-management support programmes (ie, programmes that

involve guidance, education and support provided by healthcare professionals or trained individuals).

Despite its grounding in the literature, the SMACC checklist's content validity has not yet been established by professionals in the field. Therefore, with this study we aimed to investigate the content validity of the SMACC checklist using an international Delphi method involving both research and clinical health professionals specialising in self-management support and chronic conditions.

## METHODS

A Delphi study was conducted between October 2022 and January 2023. The primary goal of using a Delphi method is to gather a diverse range of opinions and interpretations from a group of experts on a given topic with the aim to reach a level of consensus. This method is particularly useful in situations where group members may otherwise feel pressure to conform to more dominant opinions or individuals. Furthermore, the anonymity of the survey process allows for honest and straightforward responses, which can lead to a more thorough and precise representation of a group's views on the topic under discussion.<sup>28</sup>

In this study, a Delphi method was used to capture the content validity of the SMACC checklist. Content validity refers to the degree in which a questionnaire or checklist reviews all aspects of the topic or construct that it is designed to evaluate within a given target audience, in this case the content of self-management support programmes for persons with one or more chronic conditions.<sup>28 29</sup>

### Participant selection and recruitment

A purposive opt-in snowball sampling method was used to form the expert panel.<sup>30 31</sup> The experts were healthcare professionals initially recruited using email through the researchers' networks. They were asked to forward the Delphi survey to colleagues with at least 1 year of experience in self-management support or chronic conditions, through their research or clinical practice. We used a purposeful sampling method as we specifically targeted professionals with relevant expertise, whom were given the option to participate or not as they were recruited in a 'snowball' manner.<sup>30 31</sup> As our aim was to provide a widely applicable instrument, a minimum of 50 participants

were targeted for inclusion in at least the first round of the survey to ensure a broad range of perspectives and knowledge.<sup>28</sup>

### Data collection

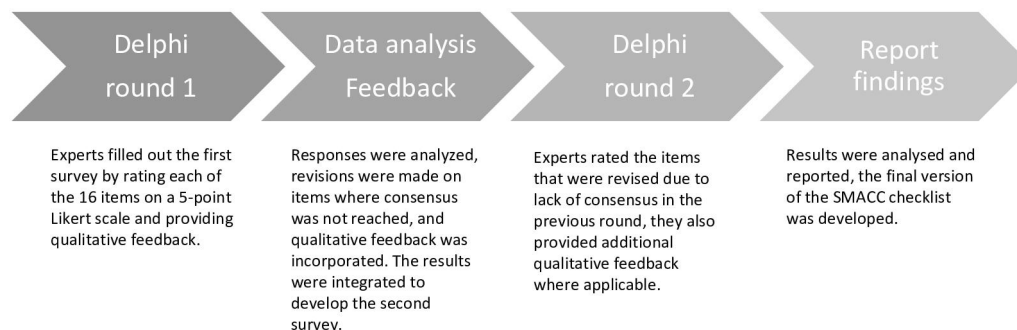
To safeguard the anonymity and independence of the participants' opinions, we used an online survey platform (Google Forms) which allowed for the option of anonymity to be maintained. This ensured that the participating professionals were not required to identify themselves, but could choose to do so if they wished to be notified of the end results (by providing their email address).<sup>28</sup> By using an online method, we also eliminated the need for practical considerations such as travel and transportation costs and removed any potential barriers related to location, allowing us to reach a wider range of participants.<sup>28</sup>

### Delphi rounds

In its essence, a Delphi study involves a series of sequential surveys across several rounds, typically at least two, with the responses of each round being used to guide necessary adaptations, and the creation of the survey for the next round.<sup>32 33</sup> This process continues until a level of consensus is reached among the participants, based on a predetermined consensus threshold.<sup>32 33</sup> In this study we established a consensus threshold of 75%, meaning that at least 75% of the participants needed to agree on an item for consensus to be reached. This threshold was chosen as appropriate for the study, considering the diverse group of experts that were included.<sup>32 33</sup> If an item or its description did not reach this threshold, adaptations were made to the item based on the received feedback before advancing to the next round. A visual representation of the process is visible in figure 1.

#### Delphi round 1: October–November 2022

After providing a brief overview of the study's purpose and design, the participants were asked to first provide informed consent for the use of their anonymous data in the publication of the study results. Then, they were asked to provide their demographic information including their respective country, profession, years of experience and in what way their research or clinical practice connected them to chronic conditions and/or self-management



**Figure 1** The Delphi process. SMACC, Self-Management Analysis in Chronic Conditions.

support. In addition to the survey, the participants were also provided with a supplementary document containing additional background information and scientific references related to each item.

The participants were asked to evaluate each of the 10 checklist items (including 8 subitems, amounting to a total of 16 items) and their background description on 3 indicators of content validity<sup>34</sup>:

1. The clarity and comprehensibility of the item.
2. The relevance and importance of each item.
3. The degree to which each item is aligned with the overall goal of the checklist to promote adequate and comprehensive self-management support interventions for people with chronic conditions.

They were asked to provide scores for each of the items using a 5-point Likert scale: ‘completely disagree’, ‘disagree’, ‘neutral’, ‘agree’ or ‘completely agree’. Only the ‘agree’ and ‘completely agree’ responses counted towards consensus. For items where the participants gave a score of ‘completely disagree’ or ‘disagree’, additional qualitative feedback was requested to gain a better understanding of the reasons for their scores. This feedback was used to understand any difficulties or misconceptions about the items and served as a basis in light of necessary revisions for the second round.

In addition to rating each item, the participants were also asked to provide feedback on the general components of the checklist such as whether the checklist was relevant in promoting or optimising self-management programmes, whether all included items were necessary, how well the checklist could encourage active action towards supporting the self-management abilities of patients in both research and clinical practice, the feasibility of implementing the checklist, whether the checklist provided sufficient information and if its content facilitated a degree of self-reflection on current care patterns. Finally, they were also asked to identify any potentially important items that were not included in the checklist.

#### Delphi round 2: December 2022–January 2023

In the second round, the participants were provided with a summary of the results from the first round, including the percentages of consensus on the three indicators of content validity per item, and explanations for any changes that were made to the items. They were then asked to rescore the adapted versions of the items and to provide additional feedback if necessary.

#### Data analysis and synthesis

After each round, the scores of the items were analysed using descriptive statistics in SPSS.<sup>35</sup> Additionally, we thematically analysed and synthesised the qualitative feedback in light of potential revisions, adaptations and refinements of the items, their background descriptions and the SMACC checklist as a whole. Before each new round, we provided a summary of the results of the previous round to the participants, to ensure transparency and to keep them and potentially newly enrolled

participants, updated on the progression of the study.<sup>28</sup> Microsoft Excel was used to produce graphical representations of the results.

#### Preventing and dealing with dropout

As participant-dropout is a common issue with Delphi surveys, we aimed to mitigate this as much as possible by initially contacting well-known researchers within their respective fields to further snowball recruitment.<sup>36 37</sup> Additionally, by providing a clear and concise email which highlighted the need for international consensus, we hoped to inspire continued participation until the end of the study.<sup>28</sup> As the survey allowed for anonymity and potential participants had the option to opt-in or not, we could not limit participation to only those who participated in the first round. However, as each round consisted of a comprehensive summary of the results and progression up until that point, we did not want to exclude professionals who could provide substantial information that would aid the further refinement of the checklist. To ensure that we had view of a consistent sample of participants throughout the survey, participants were asked to indicate their previous participation before beginning the second round.

#### Researcher reflexivity

In conducting this Delphi study, it is imperative to acknowledge and reflect on the potential influence of our own perspectives and biases. While our research team encompassed a wide range of expertise, the majority had backgrounds in occupational therapy. As the adaptation of items required making choices based on the received feedback, there is always a risk of potential bias.

Although we made every effort to maintain neutrality and objectivity, we recognise that personal beliefs and experiences can unconsciously affect a research approach. Additionally, the exclusion of patients from this study potentially introduced a bias leaning towards the perspective of healthcare providers regarding the checklist and its included items. Further validation with patients will be required.

To mitigate potential biases in this study, we employed several strategies. First, we conducted a comprehensive literature review using a specific search strategy focused on self-management and chronic conditions to delineate the concept of self-management.<sup>26</sup> This process informed the initial version of the SMACC checklist. In our concept analysis, we did not intent to include existing frameworks to prevent possible bias, as our primary objective was to delineate the concept of self-management independently, without being influenced by, and rather than engaging in, a comparative assessment of pre-existing frameworks. Second, the Delphi method itself, with its iterative and anonymous nature, aimed to minimise the influence of individual researchers on participants’ responses. Additionally, we held regular team meetings throughout the study, particularly after each round, to critically reflect on the results and decide on the necessary adjustments.

And finally, we aimed to be transparent by providing a supplemental document with all received feedback per item across both Delphi rounds.

### Patient and public involvement

We did not explicitly include public or patient involvement, beyond the recruited healthcare professionals, in the design and development of the checklist as it was based on a previously conducted concept analysis of the literature.<sup>26</sup> With this study, our primary focus was on the expertise and objectivity of healthcare providers and researchers, building on the evidence-based theoretical foundations identified in the concept analysis and further incorporating expert knowledge before incorporating the perspective of patients. Further validation with patients will be required to ensure the ultimate reliability and applicability of the checklist. The included version of the checklist will be published on a publicly accessible website of Ghent University. Additionally, it will be disseminated to non-research-specific settings (eg, primary care settings) where it will undergo further validation in the field.

## RESULTS

### Round 1

In total, 54 healthcare professionals from 8 countries participated in round 1 of the Delphi survey, including 28 clinicians, 13 clinician-researchers (defined as participants who possessed experience in both clinical practice and research) and 13 full-time researchers. The average number of years of experience among the participants was 14.5, with a median of 12 years (range 1–36 years). [Table 1](#) provides an overview of the participants' characteristics.

The participants were generally positive about the items and the checklist as a whole, and they provided valuable feedback, including suggestions for refinement, even when they already agreed with the proposed items and their descriptions. Based on the three content validity indicators, which were used to evaluate each item's clarity, relevance and alignment with promoting adequate and comprehensive self-management support, in 8 out of 10 items—including 7 subitems—we achieved consensus after the first round. However, for two items (items 3 and 9.4) consensus was not reached. [Table 2](#) provides an overview of the quantitative results. [Box 1](#) provides a summary of the qualitative feedback per item, and a comprehensive summary as well as the raw feedback data are included in the online supplemental file.

### Adaptations in light of the second round

#### Items with a lack of consensus

Item 3 '*Does the self-management programme provide scope to accommodate setbacks the person faces?*' was seen as a relevant and important item, in alignment with the aim of the checklist to promote adequate and comprehensive self-management programmes, but its clarity and comprehensibility were found to be lacking. A number

of participants noted that the wording was somewhat difficult to understand, and they suggested to rephrase the item by replacing the term 'setbacks' with a broader definition. Additionally, the description of dealing with difficult emotions *in a positive way* was perceived as too prescriptive. For the second round, we adapted the item to: '*Does the programme encourage the person to cope with difficulties in a constructive way?*' The background information was also revised in order to be less directive.

For item 9.4, which pertained to '*His/Her ability to work in partnership with healthcare providers?*' there was a lack of consensus on all three content validity indicators. Some participants noted that this item should not be limited to healthcare professionals, and includes social care providers, informal carers, other professions, for example, personal trainers, and the larger social network including family, friends and relatives. A number of participants suggested that this item exhibited a high degree of similarity with item 6, and proposed that it could possibly be removed or integrated into item 6. In the second round, we asked the participants for their agreement on the removal of this item.

#### Items where consensus was reached but adaptations were made in light of potentially missing items

For the items on which consensus was reached, two additional adaptations (to items 9.5 and 10.2) were made in response to highly recurring feedback about potentially missing items.

To item 9.5, '*His/Her ability to set goals and evaluate them?*' we added '*action planning*' as a more specific component. Although action planning was already included in the background description of this item, general feedback indicated an overall lack of action planning in the checklist, particularly in relation to goal setting (eg, action planning as the ability to divide goals into reasonable stepwise actions that support the reaching of that goal). We added this more explicitly to the item and its description: '*His/Her ability to set goals, make action plans and evaluate them?*'

For item 10.2 '*Role management*', a number of participants suggested that more information could be provided on what role management specifically entailed, and which roles this item referred to. Others noted that role management is a very important and seldom well-addressed domain in self-management support interventions, and that interventions should focus much more on the social aspects of living with a chronic condition, rather than only the medical aspects. We expanded the background information to highlight much more that this item also includes everyday activities and social interactions. We also included a synonym, '*self-management of everyday life and meaningful activities*' to support a more comprehensive understanding of the item.

For the other items on which consensus was reached, feedback was generally minor and primarily pertained to providing additional clarifications. Given the thoroughness of the first round, we implemented these changes without seeking additional input from the participants in

**Table 1** Participants' characteristics

	Round 1	%	Round 2	Joined in round 2	Total	%
<b>Profession</b>						
<b>Clinicians</b>	28	51.9	18		18	37.5
Nurse	7	13	6		6	12.5
Occupational therapist	8	14.9	6		6	12.5
Physician	8	14.8	2		2	4.2
General practitioner	4	7.4	1		1	2.1
Physician-specialist	4	7.4	1		1	2.1
Physical therapist	2	3.7	2		2	4.2
Psychologist	1	3.7	1		1	2.1
Social worker	1	1.9	1		1	2.1
<b>Clinician-researchers</b>	13	24.1	9	4	13	27.1
Nurse	3	5.6		1	1	2.1
Occupational therapist	6	11.1	6	2	8	16.7
Physician	2	3.7	1		1	2.1
Physical therapist	1	1.9	1	1	2	4.2
Psychologist	1	1.9	1		1	2.1
<b>Full-time researchers</b>	13	24.1	12	5	17	35.4
Total	54	100	39	9	48	100
<b>Experience (years)</b>						
0–5	10	18.5	8	1	9	18.7
6–10	15	27.8	15		15	31.2
11–15	6	11.1	6	2	8	16.7
16–20	8	14.8	5	4	9	18.7
21–25	7	13	2		2	4.2
26–30	4	7.4	1	1	2	4.2
30+	4	7.4	2	1	3	6.3
Average	14.5		11.5	18	12.5	
Median	12		9	20	10.5	
<b>Country</b>						
Austria	3	5.6	3		3	6.3
Belgium	15	27.8	12	5	17	35.3
France	4	7.4	2		2	4.2
The Netherlands	4	7.4	3	2	5	10.4
Spain	2	3.7	1		1	2.1
Sweden	18	33.3	11	1	12	25
Switzerland	5	9.3	4		4	8.3
UK	3	5.6	3		3	6.3
Norway				1	1	2.1
Total	54	100	39	9	48	100

the second round as these were minor changes and they had already invested a significant amount of time in the previous round.

#### General feedback and missing items

Overall, general feedback indicated that the checklist was a valuable addition to both clinical practice and research. The participants found the checklist to be comprehensive and in need of only minor revisions and clarifications.

They noted that it was highly relevant for promoting or improving self-management support programmes as it provided an adequate overview of the current knowledge. It was also seen as feasible to implement in both research and clinical settings and was said to provide adequate information to actively engage with in practice. It could also encourage a degree of self-reflection on current practice patterns. Regarding potentially missing items, recurring

**Table 2** Quantitative results: round 1

Round 1: results	Content validity indicators*		
	1	2	3
<b>Person-oriented characteristics</b>			
1. Does your self-management programme allow the person to actively participate in the care process?	92.6%	96.3%	98%
2. Does your self-management programme allow the person to take responsibility in the care process?	83.3%	92.6%	94.4%
3. Does the self-management programme provide scope to accommodate setbacks the person faces?	<b>68.5%</b>	85.2%	81.5%
<b>Person/Environmental characteristics</b>			
4. Does the self-management programme inform the person about their condition, disease and treatment?	94.4%	90.7%	92.6%
5. Can the person in the self-management programme express their needs, set values and priorities?	88.9%	92.6%	94.4%
6. Does the self-management programme promote an open partnership between the person and the care providers?	87%	90.7%	90.7%
7. Does the self-management programme address the person's openness to receive social support?	77.8%	75.9%	77.8%
<b>Overarching characteristics</b>			
8. Does the self-management programme inform the person that this is a lifelong task?	87%	85.2%	81.5%
9. Does the self-management programme address the following skills of the person:			
9.1 His/Her problem-solving ability?	94.4%	94.4%	92.6%
9.2 His/Her ability to make decisions?	90.7%	88.9%	90.7%
9.3 His/Her ability to use resources?	79.6%	88.9%	87%
9.4 His/Her ability to work in partnership with healthcare providers?	<b>74%</b>	<b>70.4%</b>	<b>70.4%</b>
9.5 His/Her ability to set goals and evaluate them?	85.2%	87%	85.2%
10. Does the self-management programme take into account:			
10.1 Medical management	92.6%	88.9%	85.2%
10.2 Role management	79.6%	88.9%	87%
10.3 Emotional management	85.2%	90.7%	88.9%
This is not the final checklist, for the final checklist please see the online supplemental appendix.			
*(1) Clarity and comprehensibility of the item. (2) Relevance and importance of the item. (3) The degree to which the item is aligned with the overall goal of the checklist to promote adequate and comprehensive self-management support interventions for people with chronic conditions.			

feedback primarily suggested a more explicit inclusion of aspects pertaining to self-management of everyday activities and social participation, and to a degree, to make action planning a more distinct part of the checklist. Some participants also expressed their desire for a checklist that included an overview of healthcare provider's skills necessary to support self-management. Overall, as the checklist was designed to be a tool that provides guidance regarding the content of self-management support programmes, it was seen as an enriching factor to existing development and implementation frameworks. However, it was also noted that the checklist should not be considered as the only tool to develop comprehensive self-management support programmes, rather as an addition to existing development frameworks. Participants also emphasised to indicate more clearly that the checklist was not designed to score intervention outcomes or processes,

but rather to facilitate the development of comprehensive self-management support programmes.

## Round 2

Round 2 included a total of 48 healthcare professionals from 9 countries including 18 clinicians, 13 clinician-researchers and 17 full-time researchers with an average number of years of experience of 12.5, median 10.5 (range 1–35). Of these, 39 participants also participated in the first round, with an average number of years of experience of 11.5, median 9.<sup>2–35</sup> Nine participants joined the Delphi study for the first time in the second round, these late participants had on average 18 years of experience, median 20.<sup>3–30</sup> Table 1 provides an overview of the participants' characteristics.

For round 2 consensus was sought on four items (table 3). All items reached consensus, without specific feedback on

## Box 1 Qualitative results: round 1

**Round 1: short summary of qualitative feedback per item** (in-depth feedback is provided in online supplemental file 1)

### Item

#### Person-oriented characteristics

1. Does the self-management programme allow the person to actively participate in the care process?

*Noted as a very important item. Feedback suggested to further clarify 'care process' and 'active participation'.*

2. Does the self-management programme allow the person to take responsibility in the care process?

*Feedback showed a need to clarify 'shared responsibility'.*

3. Does the self-management programme provide scope to accommodate setbacks the person faces?

*For this item there was no consensus on clarity and comprehensibility. 'Scope', 'setbacks' and 'in a positive way' (as described in the background description) was seen as too prescriptive.*

#### Person/Environmental characteristics

4. Does the self-management programme inform the person about their condition, disease and treatment?

*Feedback suggested to incorporate the concept of 'health literacy' could more clearly.*

5. Can the person in the self-management programme express their needs, set values and priorities?

*Feedback suggested more information on 'personalised tailoring' in the item's background description.*

6. Does the self-management programme promote an open partnership between the person and the care providers?

*The participants sought more information on the applicability of 'open partnership' in interventions.*

7. Does the self-management programme address the person's openness to receive social support?

*The participants questioned the need for the individual's ability to provide social support, as stated in the background description.*

#### Overarching characteristics

8. Does the self-management programme inform the person that this is a lifelong task?

*'Lifelong task' was considered a somewhat loaded description. It was proposed that in the item's description emphasis should be placed on a tailored approach, specific to an individual's stage in their overall process.*

9. Does the self-management programme address the following skills of the person:

9.1 His/Her problem-solving ability?

*There was no particular feedback for this item.*

9.2 His/Her ability to make decisions?

*There was no particular feedback for this item.*

9.3 His/Her ability to use resources?

*Feedback indicated a need for additional clarification on the needed skills and resources that can be used.*

9.4 His/Her ability to work in partnership with healthcare providers?

*No consensus reached for this item on any of the content validity indicators. Feedback suggested this item exhibited a high degree of similarity with item 6. Its removal was proposed as a possible solution.*

9.5 His/Her ability to set goals and evaluate them?

*Feedback indicated a need to integrate the development of action plans more clearly in the item's description. A more nuanced description of goal-setting in light of an individual's ability could be incorporated.*

10. Does the self-management programme take into account:

10.1 Medical management

Continued

## Box 1 Continued

*No particular feedback for this item.*

10.2 Role management

*This item was considered very important and seldom well-addressed in self-management interventions. More information could aid in making the item more identifiable.*

10.3 Emotional management

*Additional information in the supplementary document could aid in expanding the scope of this item.*

items 3, 9.5 and 10.2. However, for item 9.4 'His/Her ability to work in partnership with healthcare providers?' opinions were highly dispersed despite the assumed rate of consensus.

A large number of participants disagreed with the removal of the item, instead suggesting to further delineate it from item 6 'Does the self-management programme promote an open partnership between the person and the care providers?' as the items were seen as addressing two distinct components: the programme's design to support open communication in item 6, and the person's skill to engage and work in partnerships, also beyond the healthcare setting, in item 9.4.

Additionally, some participants indicated that they had selected 'agree' in response to the question asking about its removal but noted that they only agreed if the item could somehow be integrated into item 6. They expressed the opinion that it would perhaps be more beneficial to clearly distinguish the item rather than remove it entirely. One participant noted the foundational work by Lorig and Holman,<sup>38</sup> in which the ability to work in partnership with healthcare providers was identified as one of five core skills, complementing the other four skills already included in the SMACC checklist under item 9.

Based on the received feedback and the existing literature, we decided to retain item 9.4. However, to ensure clarity, we distinguished it much more clearly from item 6.

### General feedback round 2

There was no additional general feedback provided, nor any potentially missing items.

### Qualitative feedback across both rounds

A comprehensive summary, as well as the raw feedback data across both rounds, can be found in the online supplemental file.

## DISCUSSION

With this study, we aimed to investigate the content validity of the SMACC checklist using an international Delphi study with healthcare professionals with expertise in self-management and chronic conditions through their research or clinical practice. Additionally, we used the provided feedback to fine-tune the checklist into a final version. The final version of the checklist can be found in the online supplemental appendix.

Consensus was reached swiftly for the large majority of items (14 out of 16 items), with only minimal adaptations



**Table 3** Quantitative and qualitative results: round 2

**Round 2: results and short summary of qualitative feedback**

Item	Consensus
<b>The content of this item is understandable and clearly formulated:</b>	
3. Does the programme encourage the person to cope with difficulties in a constructive way?	89.6%
<b>Do you agree with the removal of this item? (based on its overlap with item 6)</b>	
9.4 His/Her ability to work in partnership with healthcare providers?	<b>83.3%</b>
<b>Do you agree with this addition?</b>	
9.5 His/Her ability to set goals, make action plans and evaluate them?	100%
<b>Do you agree with this addition in the background information?</b>	
10.2 This item also refers to self-management of everyday life and meaningful activities.	95.8%
<b>Qualitative feedback</b>	
Feedback showed a need to broaden item 6 before removal, if given the choice participants noted they would have preferred to distinguish the two items.	

required for 1 remaining item, and a somewhat dispersive journey for the last remaining item, which was ultimately retained based on recurring and well-founded feedback. While we aimed to mitigate potential biases, adapting items required making choices based on the received feedback. Despite making decisions through team meetings, we acknowledge that personal backgrounds and experiences can unconsciously influence these types of research approaches. Additionally, as patients were not included in this study, it is important to consider that the included perspectives were primarily shaped by healthcare providers. The complete list of responses across both Delphi rounds is provided in online supplemental file.

Overall, the checklist was viewed as a useful tool to support the development, comparison and evaluation of self-management support programmes. As per its intended design, it was considered complementary to established frameworks such as the Medical Research Council Framework for Developing and Evaluating Complex Interventions, or the Consolidated Framework for Implementation Research, among others.<sup>39–42</sup> As identified by Huybrechts *et al*,<sup>42</sup> these frameworks typically encompass three main phases: a development phase which involves collecting and synthesising research evidence and examining the context in which an intervention will be implemented, a translation phase which focuses on the intervention's implementation with a priority of continuous improvement, and a sustainment phase in which strategies to sustain the intervention are promoted while fostering reflection for continued improvement.

As the SMACC checklist was originally created with the intention to address the ambiguity still frequently surrounding self-management support interventions and their content, not to evaluate their efficacy, the checklist should not be used as a psychometric tool to assess the effectiveness of self-management support interventions. For the evaluation of outcomes, we would recommend established assessment instruments such as the Partners in Health Scale, the Self-Management Ability Scale or newer instruments such as the Patient-Reported Inventory of Self-Management

of Chronic Conditions measurement tool, among others, or other established instruments designed to assess specific outcomes often related to self-management such as quality of life or self-efficacy.<sup>43–50</sup> For a recent overview of self-management measures, their theoretical foundations and how they were developed, the scoping review by Lawless *et al* can be valuable.<sup>51</sup> In their review, the definition on self-management derived from our concept analysis was used as a foundation for the search strategy.<sup>26</sup>

It is also important to note that the SMACC checklist was mainly designed to support the development and evaluation of guided self-management interventions, rather than unguided interventions. Research has shown that guided interventions, or interventions that typically involve support from a therapist or healthcare provider, so far tend to be more effective compared with unguided interventions, which are typically self-directed and rely solely on a person's own motivation and effort.<sup>52–53</sup> Nevertheless, the SMACC checklist can still provide useful guidance in the development of unguided interventions, as it offers a comprehensive overview of key content that could be considered in their development.

Despite the growing evidence supporting the effectiveness of self-management support interventions, it is important to embed the checklist within the broader process that persons living with a chronic condition often go through.<sup>54–56</sup> Living with a chronic condition can present significant challenges and often requires significant adjustments in daily life.<sup>54–57</sup> Consequently, the process of accepting the condition and its impact can be complex and vary greatly from person to person.<sup>54–55</sup> Hence, to ensure optimal outcomes and support, a nuanced approach that is tailored to each person's values, needs and stage of their condition should always be considered.<sup>58</sup> Ideally, self-management support is implemented as complementary to good healthcare, rather than as a stand-alone solution for all persons with a chronic condition.<sup>59</sup> In the Chronic Care Model, self-management support is but one of six key elements that, alongside the community, the health system, delivery system design, decision support and clinical information systems, are



emphasised to provide comprehensive support for persons with chronic conditions.<sup>12</sup> The importance of providing a comprehensive level of support can be seen in patients with cardiovascular issues with moderate-to-severe depression, for example, where some self-management support interventions have resulted in increased mortality in certain subgroups of patients.<sup>60</sup>

One recurring theme in the overall feedback by the participants was the emphasis of a general need for (existing) self-management support interventions to focus much more on everyday activities and roles (ie, role management). This is a critical aspect of self-management as it is often the area that is most meaningful and relevant to patients. While it is to some extent included in existing measures like the Partners in Health Scale, it is typically under-represented in interventions.<sup>22 50 61–66</sup> Further research is necessary on how to effectively address this domain of self-management, this with the aim to improve the overall quality of life for persons living with chronic conditions and to ensure interventions are aimed at outcomes and skills that are both relevant and valued by patients. One existing tool which could provide additional guidance to support this domain is the 'Taxonomy of Everyday Self-management Strategies' (TEDSS).<sup>25</sup> As expanded upon in the introduction, the TEDSS provides an overview of self-management strategies people with a chronic condition use to manage their everyday life, with a focus on role and emotional management. It was developed using a qualitative study with people with neurological conditions, and has since been validated in other conditions.<sup>49</sup>

In contrast to both the TEDSS and PRISMS taxonomy expanded upon in the introduction, the SMACC checklist offers a more conceptual overview of the essential components for implementing self-management support programmes. Its primary strength resides in its theoretical foundation, although there is a degree of overlap between all three tools (in the online supplemental file we provided a brief overview and comparison of the items present in the SMACC, PRISMS and TEDSS).

One recent systematic review and meta-ethnography which may further be valuable when developing self-management support interventions is the study by Lawless *et al.*<sup>67</sup> In this study, the authors provided an overview with the aim of consolidating underlying theories that guide self-management support interventions. They identified a total of 76 theories, with 7 common constructs typically serving as their foundation: (1) temporal and spatial context; (2) stressors; (3) personal resources; (4) informal social resources; (5) formal social resources; (6) behavioural adaptations and (7) quality of life outcomes.<sup>67</sup>

In conclusion, the SMACC checklist explored within this study was considered a valid and comprehensive tool to aid the development, evaluation and comparison of self-management support programmes. It was acknowledged as a useful instrument to supplement existing frameworks and tools and was seen as feasible to implement in both research and clinical settings. At this time, the SMACC checklist should be viewed primarily as a research tool, and

its continued use by researchers and clinicians in the field will be essential for its further development and practical application.

### Limitations and strengths

The strengths of the study are the checklist's grounding in the scientific literature, the high level of consensus on the items, the transparent research process and as it is the first checklist in this manner to our knowledge, it can provide researchers and clinicians with a research tool to guide the development of support interventions in an otherwise still ambiguous domain. A wide variety of healthcare professionals from different work settings participated, and their overall average and median years of experience was high (average 14.5 years, median 12 years in round 1; average 12.5 years, median 10.5 years in round 2).

Potential limitations of the study can be ascribed to the limited geographic diversity of the participants, as they were primarily from Western and Northern European countries with a high concentration from Sweden and Belgium. Participants from some countries noted that they would have loved to snowball the survey further, but that language barriers or the extent of their network appeared to make this difficult. Translating the checklist to different languages and cultural contexts could support its implementation in clinical settings more broadly. Additionally, while the participants had the option to partially agree or disagree, and a 'neutral' option was available (which did not count towards consensus), using a 5-point Likert scale may have limited the sensitivity of consensus reached. Employing a more comprehensive scale may have yielded more nuanced results.

Another potential limitation of this Delphi study is its reliance on a checklist founded on the results of a concept analysis conducted by the same research group. This concept analysis aimed to clarify the concept of self-management in healthcare and intentionally excluded terms such as 'self-care' and 'activation' from the search. It remains unclear whether including these terms would have provided additional insights into the expanding knowledge on self-management and self-management support. Therefore, further research is needed, possibly through a comparative analysis or by using a different form of concept analysis that allows for the consideration of juxtaposing concepts.

With the SMACC checklist, our goal was to address an unexplored focus and perspective, starting from a new concept analysis which was aimed at defining a comprehensive definition of self-management and its attributes. The methodology used in a concept analysis permits the exclusion of additional articles once data saturation has been reached (ie, when no new attributes are identified).<sup>26 68</sup> When comparing the identified attributes of self-management and their alignment with established definitions found in widely used measures like the Patient Activation Measure and the Partners in Health Scale, or other existing studies, it becomes evident that many of these attributes were also delineated in previously conducted studies.<sup>50 69 70</sup> This observation further underscores the

robustness of our initial concept analysis. Hence, the checklist and its foundation found within the concept analysis should be seen as complementary to existing tools and frameworks, rather than a substitute.

### Future research

This Delphi study involved professionals with expertise in self-management support and chronic conditions. In this study, our primary focus was on leveraging the expertise and objectivity of healthcare providers and researchers, building on the evidence-based theoretical foundations identified in the concept analysis. Additionally, the checklist contains healthcare-specific terminology that might be challenging for all patients to understand. Further validation with patients will be necessary to ensure the checklist's reliability and applicability.

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