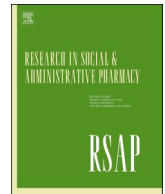




Contents lists available at ScienceDirect

## Research in Social and Administrative Pharmacy

journal homepage: [www.elsevier.com/locate/rsap](http://www.elsevier.com/locate/rsap)

## Translation, cross-cultural adaptation, and validation of Danish version of the revised Patients' Attitudes Towards Deprescribing (rPATD) questionnaire: Version for older people with limited life expectancy

Carina Lundby<sup>a,b,c,\*</sup>, Trine Simonsen<sup>a</sup>, Jesper Ryg<sup>d,e</sup>, Jens Søndergaard<sup>f</sup>, Anton Pottegård<sup>a,c</sup>, Henrik Hein Lauridsen<sup>g</sup>

<sup>a</sup> Hospital Pharmacy Funen, Odense University Hospital, Odense C, Denmark

<sup>b</sup> OPEN, Open Patient Data Explorative Network, Odense University Hospital, Odense C, Denmark

<sup>c</sup> Clinical Pharmacology, Pharmacy and Environmental Medicine, Department of Public Health, University of Southern Denmark, Odense C, Denmark

<sup>d</sup> Department of Geriatric Medicine, Odense University Hospital, Odense C, Denmark

<sup>e</sup> Geriatric Research Unit, Department of Clinical Research, University of Southern Denmark, Odense C, Denmark

<sup>f</sup> Research Unit of General Practice, Department of Public Health, University of Southern Denmark, Odense C, Denmark

<sup>g</sup> Research Unit of Clinical Biomechanics, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense M, Denmark

## ARTICLE INFO

## Keywords:

Deprescribing  
Questionnaire  
Cross-cultural adaptation  
Validation  
Older people  
Limited life expectancy

## ABSTRACT

**Background:** Knowledge about patients' attitudes towards deprescribing is essential for optimizing medication use. The revised Patients' Attitudes Towards Deprescribing (rPATD) questionnaire is a 22-item self-report instrument capturing older patients' beliefs and attitudes towards deprescribing.

**Objectives:** To translate and cross-culturally adapt the rPATD questionnaire into Danish and subsequently validate it in a cohort of nursing home residents.

**Methods:** The rPATD questionnaire was translated and cross-culturally adapted during five stages of forward and backward translation. The validation study included 162 Danish nursing home residents (median age 84 years; 67% women). Validity was assessed through exploratory factor analysis (structural validity) and hypothesis testing (construct validity), while reliability was assessed through internal consistency. Floor and ceiling effects were examined.

**Results:** The exploratory factor analysis revealed a 4-factor structure similar to the original rPATD questionnaire, with items loading into four factors related to level of involvement in medication use, perceived burden of taking medication, belief in appropriateness of using medication, and concerns about stopping medication. The questionnaire was adjusted to the Danish nursing home population and health care system by omission of two items, concerning medication expenses and inconvenience of taking medication, which resulted in a model with factor loadings ranging from 0.29 to 0.84 and only minor cross-loading. Construct validity correctly predicted 67% of the hypothesized correlations. Internal consistency of all factors was generally acceptable with Cronbach's  $\alpha$  ranging from 0.67 to 0.78. No floor and ceiling effects were identified.

**Conclusions:** Results suggest that the Danish modified model of the rPATD questionnaire generally has acceptable validity and reliability.

## Introduction

For older people reaching the last years of life, continued use of many medications may be of questionable benefit due to their limited life expectancy<sup>1,2</sup> and shifts in goals of care.<sup>3</sup> Continuous reconsideration and adjustment of medication use, e.g. in relation to changes in

physiology and disease status, is therefore essential to ensure optimal care among this population.<sup>4</sup> This could include deprescribing which has been defined as the planned, supervised dose reduction or stopping of a medication.<sup>5,6</sup> However, despite increasing recognition of deprescribing as a solution to promote appropriate medication use<sup>7</sup> and growing evidence on the positive effects of deprescribing,<sup>8–10</sup> use of

\* Corresponding author. Hospital Pharmacy Funen, Odense University Hospital, Solfaldsvej 38, Entrance 208, DK-5000 Odense C, Denmark.

E-mail address: [carina.lundby.olesen@rsyd.dk](mailto:carina.lundby.olesen@rsyd.dk) (C. Lundby).

<https://doi.org/10.1016/j.sapharm.2020.11.001>

Received 22 July 2020; Received in revised form 29 October 2020; Accepted 1 November 2020

Available online 4 November 2020

1551-7411/© 2020 Published by Elsevier Inc.

medication with questionable benefit is common among older people reaching the last years of life.<sup>11-16</sup> Further, clinicians generally consider deprescribing as challenging, and barriers have been identified among both health care professionals<sup>17,18</sup> and patients.<sup>19-21</sup> From the patients' perspective, reported barriers include trust in appropriateness of current medication, concerns about potential negative consequences of deprescribing, and lack of time and support from physician to cease a drug.<sup>19-21</sup>

Recent reviews have emphasized the importance of patient involvement and shared decision-making to ensure successful deprescribing.<sup>5,22</sup> This should include discussing goals and treatment preferences as well as addressing questions and concerns, thereby enabling adjustment of treatment according to patients' priorities.<sup>23</sup> The revised Patients' Attitudes Towards Deprescribing (rPATD) questionnaire, a validated 22-item self-report instrument capturing older patients' beliefs and attitudes towards deprescribing,<sup>24</sup> can be used to approach this. The questionnaire was developed in Australia in 2016 and is a revision of the Patients' Attitudes Towards Deprescribing (PATD) questionnaire.<sup>25</sup> Validation of the rPATD questionnaire among older adults ( $\geq 65$  years) has shown acceptable validity and reliability.<sup>24</sup> While studies using the questionnaire have found that older people are generally open towards deprescribing,<sup>26,27</sup> little is known about the attitudes specifically among older people with limited life expectancy. Thus, we aimed to translate and cross-culturally adapt the rPATD questionnaire into Danish and subsequently validate the Danish version in a cohort of nursing home residents.

## Methods

We translated and cross-culturally adapted the rPATD questionnaire into Danish and subsequently validated the Danish version. To explore attitudes specifically among older people with limited life expectancy, we carried out the validation study in a cohort of nursing home residents.

### *Translation and cross-cultural adaptation*

The rPATD questionnaire was translated and cross-culturally adapted during five stages of forward and backward translation according to the guidelines outlined by Beaton et al.<sup>28</sup> 1) Two forward translations (T1 and T2) of the original rPATD questionnaire were carried out independently by two bilingual translators with Danish as their mother tongue. Both translators were informed about the concept of the questionnaire, while only one of the translators had a medical background. Both translators produced a written report of their translation. 2) During a meeting with participation of the two translators and the main author (CL), the translations were reviewed and synthesized into a single Danish translation (T-12). A written report was produced to document the synthesis and consensus process. 3) Two backward translations (BT1 and BT2) of T-12 were carried out by another two bilingual translators with English as their mother tongue. Similarly, both translators were informed about the concept of the questionnaire, while only one of the translators had a medical background. Also, both translators produced a written report of their translation. 4) An expert group, comprising the four translators, a pharmacist (CL), and a methodologist in psychometrics (HHL), reviewed all translations (T1, T2, T-12, BT1, and BT2). Written reports documented all stages of the process and resulted in the pre-final version of the questionnaire. 5) The pre-final questionnaire was tested for face validity among 11 nursing home residents using semi-structured face-to-face interviews. The interviews were carried out using a cognitive interview style based on 'think aloud' and 'probing' techniques,<sup>29</sup> and aimed to test the questionnaire's relevance, comprehensibility, acceptability, and feasibility.<sup>30</sup> Based on the results from the pilot study, the questionnaire was adjusted into a final version. A similar process was used for translating and cross-culturally adapting the Abbreviated Wake Forest Trust in

Physician Scale<sup>31</sup> which was used to test for construct validity in the validation of the rPATD questionnaire. Consent to translate and cross-culturally adapt the instruments into Danish were obtained from the developers (Reeve et al.<sup>24</sup> and Dugan et al.<sup>31</sup>).

### *Validation study*

#### *Setting*

There is no clear definition of when an older individual is considered as having limited life expectancy. However, as the median survival of Danish nursing home residents is approximately two years,<sup>32</sup> it was decided to use nursing home residency as a proxy for limited life expectancy. Similar survivals have been found in nursing home populations in other European countries.<sup>33</sup> According to Danish law, nursing home residency should be appointed to individuals with frailty needing all-day care. All Danish citizens can apply for nursing home residency, however, appointment of the frailest individuals is decided by the local municipalities.<sup>34</sup>

#### *Participants and data collection*

Participants were recruited through 27 nursing homes from nine municipalities in the Region of Southern Denmark from November 2018 to March 2019. Initially, nursing staff at the nursing homes identified residents willing and seemingly able to participate in the study. Hereafter, eligibility was assessed by one author (CL or TS) by visiting the residents in their room at the nursing homes. Residents were eligible for study participation if they 1) spoke and understood Danish, and 2) had an Orientation-Memory-Concentration (OMC) score<sup>35</sup> of  $\geq 8$  and thus were deemed able to provide written consent.

The included questionnaires were researcher-administered. Following inclusion, one author (CL or TS) went through each question in the questionnaires with the residents. It was initially decided to use this approach, as Danish nursing home residents generally constitute a very frail population<sup>32</sup> and most residents would not be able to fill in the questionnaires themselves, e.g. due to impaired vision and not being able to hold a pen. To ensure consistency in the data collection, the two authors visited the first ten participants together to standardize the approach for reading questions out loud and obtaining answers from the participants. The response options to the questions were presented to the residents on a paper in a large font. If the residents did not provide an answer to a question after having it read three times, the response for the given question was registered as missing. A secure web application, REDCap, was used for configuration of the questionnaires and storage of the collected data.<sup>36</sup>

#### *Questionnaires*

The rPATD questionnaire consists of four 5-item factors reflecting older patients' beliefs and attitudes towards deprescribing. These factors are related to level of involvement in medication use, perceived burden of taking medication, belief in appropriateness of using medication, and concerns about stopping medication. Further, the questionnaire contains two global questions, concerning satisfaction with medication and willingness to stop a medication if proposed by a physician. The questionnaire uses a 5-point Likert response scale (1-5 points) and a scoring system with a total score being calculated for each of the four factors. The scores are calculated as the average of the summed score for the five questions in each factor, thus giving scores ranging from 1 to 5. A higher total score indicates more involvement, a greater perceived burden, and more concerns. Due to reverse scoring in the 'appropriateness' factor, a higher total score for this factor indicates a greater belief in appropriateness.<sup>24</sup>

In addition to the rPATD questionnaire, two other previously validated instruments were included in the data collection to test for construct validity as well as for baseline characteristics. The first instrument concerned the Abbreviated Wake Forest Trust in Physician Scale, a 5-item instrument to assess patients' trust in a physician. This

scale uses a 5-point Likert response scale (1–5 points), with one total score being calculated by summing up the responses (possible score range: 5–25). A higher total score indicates more trust in the physician.<sup>31</sup> The second instrument concerned the Beliefs about Medicines Questionnaire (BMQ) Specific-Concern Scale, a 5-item scale to assess patients' concerns about prescribed medication. Similarly, this scale uses a 5-point Likert response scale (1–5 points), with one total score being calculated by summing up the responses (possible score range: 5–25). A higher total score indicates more concerns about prescribed medication.<sup>37</sup>

#### Scoring of questionnaires

To adjust for missing items, all scores were converted to a 0–100 scale using proportional recalculation.<sup>38</sup> If two or more items were missing within a given rPATD factor, the factor was discarded for that patient, that is, no total score was calculated for the factor. This also applied to the scores of the Abbreviated Wake Forest Trust in Physician Scale and the BMQ Specific-Concern Scale.

#### Sample size

The validation study was based on commonly accepted participant requirements for factor analytical techniques. These techniques require a reasonable number of participants to produce reliable results; however, the debate on the minimal requirement is still ongoing. Rules of thumb suggest 4–10 participants per item, with at least 100 participants to ensure stability of the variance-covariance matrix.<sup>30,39</sup> It was decided to include 8 participants per item, resulting in a target sample size of 176 participants, as this was deemed sufficient and feasible.

#### Psychometric evaluation

The psychometric properties of the rPATD questionnaire were evaluated following the COnsensus-based Standards for the selection of health Measurement Instruments (COSMIN) taxonomy.<sup>40</sup>

#### Item analysis

Items were examined through answer distribution, kurtosis, and skewness. Less than 15% of missing items was considered acceptable.<sup>30</sup>

#### Structural validity

An exploratory factor analysis (EFA) was conducted to identify the underlying factor structure of the rPATD questionnaire. The EFA was carried out on 20 items from the original rPATD questionnaire, excluding the two global questions (item 1 and 7).<sup>24</sup> Initially, sampling adequacy was tested using Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin test.

The EFA was conducted as a principal axis factor analysis using a polychoric correlation matrix, combined with oblique promax rotation. Initially, the number of factors was examined using a scree plot. Only factors with an eigenvalue of  $>1$  were retained,<sup>30</sup> indicating that the factor accounts for more variance than an average single item.<sup>41</sup> Hereafter, a stepwise approach was used to improve factor loadings and reduce cross-loading, by individual exclusion of items identified as problematic during the data collection as well as from the preliminary results. Factor loadings of  $>0.5$  were considered acceptable.<sup>30</sup> A clinical assessment was used to determine the final allocation of items loading in more than one factor, that is, these items were allocated to the factor where it made most sense clinically. Items were excluded if considered clinically irrelevant in terms of the Danish nursing home population and/or health care system.

#### Construct validity

Construct validity was tested through nine hypotheses regarding the size and direction of correlations between rPATD factor scores and scores of the two additional instruments and baseline characteristics (Appendix A). The strength of correlations was formulated according to

Cohen's criteria, with strong correlations being  $>0.5$ , moderate correlations being between 0.3 and 0.5, and weak correlations being  $<0.3$ .<sup>42</sup> Correlations were calculated as Spearman's rank correlation coefficient. The percentage of correctly predicted hypotheses was determined as an indicator of the strength of evidence for construct validity.<sup>30,43</sup>

#### Reliability

Internal consistency was assessed for each rPATD factor using Cronbach's  $\alpha$ . An  $\alpha$  between 0.7 and 0.9 was considered acceptable.<sup>30</sup>

#### Floor and ceiling effects

Floor and ceiling effects were assessed through the score distribution for each rPATD factor. Less than 15% of the participants achieving the lowest or highest possible score was considered acceptable.<sup>30</sup>

#### Other

All analyses were performed using Stata 16 (StataCorp, College Station, TX, USA).

#### Ethics

The study was approved by the Danish Data Protection Agency (approval 18/46232). The Regional Committees on Health Research Ethics waived registration due to the study design (case number 20182000-129). Inclusion of participants was based on informed and written consent.

#### Results

##### Translation and cross-cultural adaptation

The English version of the rPATD questionnaire was successfully translated into Danish. The translators only had suggestions for minor improvements by use of more commonly used Danish words and phrases, which were all incorporated into the pre-final version. Further, as Danish residents are not appointed a pharmacist like they are a general practitioner, the expert group decided to replace 'my pharmacist' with 'at the pharmacy' in item 5 (as many Danish residents will usually pick up their medication from different community pharmacies). All stages during the translation process were documented and approved by the expert group.

The pre-final version was tested for face validity through cognitive interviews with 11 nursing home residents, who did not report any major problems regarding comprehension of the instrument. One exception concerned item 5 for which the participants expressed difficulties with understanding the meaning of 'other health care professional'. As such, due to nursing home residents' daily contact with nurses and health care assistants, the expert group decided to replace 'other health care professional' with 'the nursing staff'. Otherwise, the Danish version was found to be acceptable by the participants.

Use of the final Danish version of the rPATD questionnaire among nursing home residents was considered feasible by the author group. The Danish version is available in Appendix B for use of other researchers.

##### Validation study

A total of 196 nursing home residents were screened for eligibility. Of these, 19 were excluded due to cognitive impairment, corresponding to an OMC score of  $<8$ , 14 refused to provide written consent, and one withdrew consent following inclusion. Thus, a total of 162 nursing home residents were included in the study. The baseline characteristics of the participants are shown in Table 1.

**Table 1**  
Baseline characteristics of participants.

Characteristic	Study population (n = 162)
Women	108 (67%)
Age, median (IQR)	84 (75–91)
OMC score <sup>a</sup>	
Median (IQR)	18 (14–24)
8–17	70 (43%)
18–24	59 (36%)
25–28	33 (20%)
Number of regular medications	
Median (IQR)	8 (6–10)
1–4	28 (17%)
5–9	80 (49%)
10–14	44 (27%)
≥15	10 (6.2%)
Number of as-needed medications, median (IQR)	2 (1–3)
Number of vitamins, median (IQR)	1 (1–2)
Abbreviated Wake Forest Trust in Physician score, median (IQR)	77 (80–90)
BMQ Specific-Concerns score, median (IQR)	35 (25–50)

BMQ, Beliefs about Medicines Questionnaire; IQR, interquartile range; OMC, Orientation-Memory-Concentration.

<sup>a</sup> OMC scores: 8–17: Moderate cognitive impairment; 18–24: Slight cognitive impairment; 25–28: Normal or minimal cognitive impairment.<sup>35</sup>

### Psychometric evaluation

#### Item analysis

The answer distribution for the 22 items in the rPATD questionnaire is shown in Table 2. Peaked and skewed distributions were seen for item 1 (88% answering ‘agree’ or ‘strongly agree’; kurtosis: 5.91; skewness: 1.43) and 9 (90% answering ‘disagree’ or ‘strongly disagree’; kurtosis: 8.11; skewness: 1.70), indicating that it may be difficult to measure changes over time for these items. Higher rates of missing items were seen for item 10 (7%) and 15 (7%). The remaining items’ missing responses ranged from 1 to 6% which was considered acceptable.<sup>30</sup>

#### Structural validity

The EFA was carried out on a sample of 162 participants to ensure the stability of the variance-covariance matrix.<sup>30,39</sup> The initial tests for sampling adequacy showed that the sample was factorable (Bartlett’s Test of Sphericity:  $P = 0.00$ ; Kaiser-Meyer-Olkin test = 0.73). The scree plot revealed a 4-factor structure.

The factor loadings from the EFA are shown in Table 3. The items revealed to load in four factors similar to the original rPATD questionnaire.<sup>24</sup> Model 1, corresponding to the original rPATD questionnaire, showed reasonable loadings for the ‘involvement’ and ‘appropriateness’ factor (range 0.40–0.82) but poor loadings for the ‘burden’ and ‘concerns about stopping’ factor. Further, cross-loading was found for more than half of the items ( $n = 11$ ). It was therefore decided to exclude item 10, concerning medication expenses, as the majority of participants expressed difficulty with answering this question during the data collection, stating that either relatives or nursing staff were responsible for purchasing their medication. This was also reflected in the item analysis where item 10 showed the highest rate of missing items (7%; Table 2). By exclusion of item 10, the model improved modestly. It continued to show reasonable loadings for the ‘involvement’ and ‘appropriateness’ factor (range 0.40–0.89) and poor loadings for the ‘burden’ and ‘concerns about stopping’ factor (six items with loading  $< 0.5$ ), while cross-loading was reduced to nine items (model 2; Table 3). It was therefore decided to further exclude item 9, concerning inconvenience of taking medication, as the majority of participants explained that it was not inconvenient at all to take their medication, as they had it ‘served’ by the nursing staff and thus did not have to do anything themselves (90% answering ‘disagree’ or ‘strongly disagree’; Table 2). By additional exclusion of item 9, the model improved significantly.

Generally, all factors showed reasonable loadings (range 0.36–0.84) except item 16, concerning side effects, which had a loading of 0.29 (model 3; Table 3). Furthermore, cross-loading was reduced to only four items (item 15, 16, 18, and 22). Further exclusion of items did not result in any significant improvements of the model (data not shown). Thus, model 3 was considered the best fit for this population.

The score distribution for the four factors in model 3 is shown in Fig. 1. Generally, the entire score range was used for each factor. The median factor scores were as follows: ‘involvement’ factor: 75 (interquartile range [IQR] 60–80); ‘burden’ factor: 42 (IQR 25–67); ‘appropriateness’ factor: 65 (IQR 50–75); and ‘concerns about stopping’ factor: 40 (IQR 30–55).

#### Construct validity

Of the nine hypothesized correlations, the proportion of correctly predicted correlations was 67% ( $n = 6$ ) (Table 4) which was considered acceptable.

#### Reliability

Cronbach’s  $\alpha$  ranged from 0.71 to 0.78 for the ‘involvement’, ‘burden’, and ‘appropriateness’ factor (model 3; Table 3) which was considered acceptable.<sup>30</sup> The ‘concerns about stopping’ factor had an  $\alpha$  of 0.67.

#### Floor and ceiling effects

Floor and ceiling effects were assessed through the score distribution for the four factors (model 3; Fig. 1). Participants obtaining the lowest possible score (0) ranged from 0 to 3.7%, while participants obtaining the highest possible score (100) ranged from 0 to 5.6%. Thus, no floor and ceiling effects were identified.<sup>30</sup>

### Discussion

We successfully translated and cross-culturally adapted the rPATD questionnaire into Danish. Upon validation in a cohort of nursing home residents, an EFA revealed a 4-factor structure similar to the original rPATD questionnaire; however, to adjust the questionnaire to the Danish nursing home population and health care system, we excluded two items. The final model generally showed acceptable structural validity, construct validity, and internal consistency, while no floor and ceiling effects were identified.

The rPATD questionnaire has previously been translated and cross-culturally adapted into other languages,<sup>44–46</sup> while only two versions in Arabic<sup>47</sup> and French<sup>48</sup> have been thoroughly validated. Although the target population of the original rPATD questionnaire is older patients, the validation of the Arabic version was carried out in a cohort of adult patients (mean age of 60 years). Despite this, and similar to our results, the authors reported a 4-factor structure similar to the original rPATD questionnaire.<sup>47</sup> The validation of the French version included older patients ( $\geq 65$  years), living in both community and institutions, from four French-speaking countries (Belgium, Canada, France, and Switzerland). The authors similarly reported a 4-factor-structure similar to the original rPATD questionnaire.<sup>48</sup> This supports the generalizability of the rPATD questionnaire among patients with different languages and cultures in different settings and health care systems.<sup>47</sup>

Through an EFA, we found the items to load in four factors similar to the original rPATD questionnaire<sup>24</sup> although the model showed poor structural validity (model 1). Using a stepwise approach, we significantly improved the model by exclusion of item 9 and 10 (model 3). The PATD questionnaire was originally developed and validated to capture beliefs and attitudes of patients in general,<sup>25</sup> while the revised version (rPATD) was developed and validated for use among older patients.<sup>24</sup> As the Danish nursing home population generally constitutes a very frail population,<sup>32</sup> nursing home residents seldom administer their own medication. Further, many nursing home residents will have their medication expenses almost or completely covered by the Danish health

**Table 2**  
Answer distribution for the 22 items in the revised Patients' Attitudes Towards Deprescribing (rPATD) questionnaire<sup>a</sup>.

Item number and question	Strongly agree n (%)	Agree n (%)	Unsure n (%)	Disagree n (%)	Strongly disagree n (%)	Missing n (%)	Kurtosis <sup>b</sup>	Skewness <sup>c</sup>
1. Overall, I am satisfied with my current medicines <sup>d</sup>	52 (32)	90 (56)	9 (6)	7 (4)	3 (2)	1 (1)	5.91	1.43
2. I like to be involved in making decisions about my medicines with my doctors	45 (28)	76 (47)	16 (10)	14 (9)	4 (2)	7 (4)	3.74	1.05
3. I have a good understanding of the reasons I was prescribed each of my medicines	36 (22)	89 (55)	10 (6)	19 (12)	3 (2)	5 (3)	3.66	1.05
4. I like to know as much as possible about my medicines	54 (33)	78 (48)	9 (6)	18 (11)	2 (1)	1 (1)	3.61	1.08
5. I always ask my doctor, at the pharmacy or the nursing staff if there is something I don't understand about my medicines	42 (26)	75 (46)	13 (8)	26 (16)	4 (2)	2 (1)	2.73	0.80
6. I know exactly what medicines I am currently taking, and/or I keep an up to date list of my medicines	28 (17)	55 (34)	18 (11)	44 (27)	11 (7)	6 (4)	1.80	0.22
7. If my doctor said it was possible I would be willing to stop one or more of my regular medicines <sup>d</sup>	62 (38)	76 (47)	7 (4)	12 (7)	3 (2)	2 (1)	4.73	1.36
8. I feel that I am taking a large number of medicines	34 (21)	55 (34)	5 (3)	55 (34)	11 (7)	2 (1)	1.59	0.16
9. Taking my medicines every day is very inconvenient	3 (2)	5 (3)	4 (2)	106 (65)	41 (25)	3 (2)	8.11	-1.70
10. I spend a lot of money on my medicines	22 (14)	47 (29)	31 (19)	39 (24)	11 (7)	12 (7)	1.97	0.13
11. Sometimes I think I take too many medicines	14 (9)	38 (23)	16 (10)	68 (42)	19 (12)	7 (4)	1.96	-0.39
12. I feel that my medicines are a burden to me	8 (5)	17 (10)	12 (7)	94 (58)	28 (17)	3 (2)	3.78	-1.14
13. I would like to try stopping one of my medicines to see how I feel without it	12 (7)	45 (28)	13 (8)	63 (39)	23 (14)	6 (4)	1.81	-0.27
14. I would like my doctor to reduce the dose of one or more of my medicines	12 (7)	39 (24)	16 (10)	65 (40)	21 (13)	9 (6)	1.94	-0.36
15. I feel that I may be taking one or more medicines that I no longer need	10 (6)	25 (15)	18 (11)	72 (44)	26 (16)	11 (7)	2.53	-0.70
16. I believe one or more of my medicines may be currently giving me side effects	7 (4)	20 (12)	11 (7)	91 (56)	27 (17)	6 (4)	3.47	-1.05
17. I think one or more of my medicines may not be working	4 (2)	18 (11)	33 (20)	84 (52)	14 (9)	9 (6)	3.35	-0.82
18. I have had a bad experience when stopping a medicine before	20 (12)	17 (10)	5 (3)	84 (52)	31 (19)	5 (3)	2.68	-0.95
19. I would be reluctant to stop a medicine that I had been taking for a long time	30 (19)	46 (28)	17 (10)	53 (33)	8 (5)	8 (5)	1.66	0.03
20. If one of my medicines was stopped I would be worried about missing out on future benefits	30 (19)	59 (36)	19 (12)	38 (23)	7 (4)	9 (6)	1.96	0.36
21. I get stressed whenever changes are made to my medicines	14 (9)	22 (14)	12 (7)	73 (45)	31 (19)	10 (6)	2.55	-0.79
22. If my doctor recommended stopping a medicine I would feel that he/she was giving up on me	9 (6)	12 (7)	13 (8)	81 (50)	39 (24)	8 (5)	3.93	-1.19

rPATD, revised Patients' Attitudes Towards Deprescribing.

<sup>a</sup> Item wording from the original English version of the rPATD questionnaire is used in this table.<sup>24</sup> One exception concerns item 5 for which the pronounced changes made for the Danish version have been incorporated (see the Results section for details). For the Danish version of the rPATD questionnaire, see [Appendix B](#).

<sup>b</sup> Measure of the peakedness of a distribution. A coefficient of 3 indicates a normal distribution, while a coefficient of <3 or >3 indicates a flatter or more peaked distribution, respectively.

<sup>c</sup> Measure of the symmetry of a distribution. A coefficient of 0 indicates a symmetric distribution, while a negative or positive coefficient indicates a left skewed or right skewed distribution, respectively.

<sup>d</sup> Global question, that is, the item is not included in any of the four factors.

**Table 3**

Factor loadings and Cronbach's  $\alpha$  of factors in three models of the revised Patients' Attitudes Towards Deprescribing (rPATD) questionnaire after exploratory factor analysis with rotation.

Item number and content <sup>a</sup>	Factor loading		
	Model 1 None items excluded	Model 2 Item 10 excluded	Model 3 Item 9 and 10 excluded
<b>'Involvement' factor</b>			
2 (involved in decisions)	0.74	0.74	0.73
3 (good understanding)	0.46	0.49	0.50
4 (know as much as possible)	0.80	0.83	0.84
5 (always ask if I don't understand)	0.69	0.64	0.68
6 (know current medicines)	0.50	0.40	0.42
Cronbach's $\alpha$	<b>0.71</b>	<b>0.71</b>	<b>0.71</b>
<b>'Burden' factor</b>			
8 (large number of medicines)	-0.0092	0.18	0.59
9 (inconvenient)	0.61	0.57	NA
10 (money/expensive medicines)	-0.093	NA	NA
11 (too many medicines)	0.26	0.38	0.83
12 (burden)	0.28	0.37	0.69
Cronbach's $\alpha$	<b>0.68</b>	<b>0.65</b>	<b>0.73</b>
<b>'Appropriateness' factor</b>			
13 (would like to try stopping)	0.79	0.84	0.79
14 (reduce the dose)	0.82	0.89	0.84
15 (one or more medicines that I no longer need)	0.79	0.83	0.62 <sup>b</sup>
16 (side effects)	0.40	0.41	0.29 <sup>b</sup>
17 (not working)	0.54	0.68	0.58
Cronbach's $\alpha$	<b>0.78</b>	<b>0.78</b>	<b>0.78</b>
<b>'Concerns about stopping' factor</b>			
18 (previous bad experience)	0.071	0.15	0.48 <sup>b</sup>
19 (reluctant to stop a long-term medicine)	0.52	0.57	0.70
20 (missing out on future benefits)	0.65	0.74	0.64
21 (stressed)	0.22	0.29	0.60
22 (giving up)	0.028	-0.039	0.36 <sup>b</sup>
Cronbach's $\alpha$	<b>0.67</b>	<b>0.67</b>	<b>0.67</b>

NA, not applicable; rPATD, revised Patients' Attitudes Towards Deprescribing.

<sup>a</sup> Item 1 and 7 are not included in this table as they constitute the global questions and thus are not included in any of the four factors. For the full rPATD questionnaire, see [Table 2](#).

<sup>b</sup> Items showing cross-loading in the model considered the best fit for the Danish nursing home population.

care system. Thus, while item 9 and 10 may be relevant among older people in general, it will make less sense to ask questions regarding inconvenience of taking medication and medication expenses to the nursing home population, as the residents will usually neither handle their medication themselves nor have high medication expenses. As this is also reflected in our results, we consider the proposed modified model (model 3) the best fit for a Danish population of older people with limited life expectancy and those living in countries with health care systems similar to the Danish one. Although the original rPATD questionnaire was validated in a cohort of older patients ( $\geq 65$  years), the factor loadings found in our study are quite similar to that found by Reeve et al., where lower factor loadings ( $<0.5$ ) were also reported for item 16, 18, and 22<sup>24</sup> (model 3). Similarly, lower factor loadings ( $<0.5$ ) were also reported for item 9, 16, and 22 in the French version.<sup>48</sup>

Four of the items in the proposed model (model 3) exhibited cross-loading (item 15, 16, 18, and 22). Item 16, concerning side effects, loaded in both the 'appropriateness' and 'concerns about stopping' factor, with a stronger loading to the latter. This indicates that, while an experience of side effects may affect a person's perception of the appropriateness of a certain treatment, it may also constitute a concern

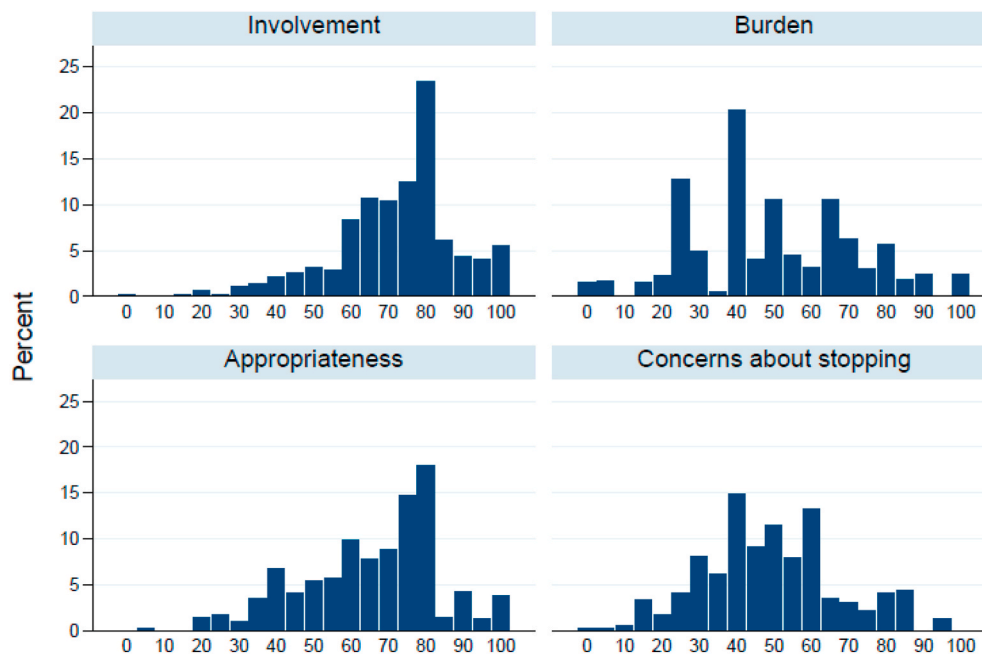
in terms of stopping the treatment, that is, that discontinuation may result in development of new symptoms. Reeve et al. also found item 16 to exhibit cross-loading, although this concerned the 'appropriateness' and 'burden' factor, and argue that side effects may also be experienced as a burden of taking medication.<sup>24</sup> Although we found item 16 to load stronger in the 'concerns about stopping' factor, we decided to retain it in the 'appropriateness' factor, as this makes more sense clinically as well as to be comparable to other studies using the questionnaire. Nevertheless, based on the cross-loading found in the English<sup>24</sup> and Danish version as well as the lower factor loading found in the English,<sup>24</sup> French,<sup>48</sup> and Danish version, it seems that item 16 may not be represented by any of the factors and thus could be an individual item. Further, item 22, concerning the feeling of being given up on by one's physician, loaded in both the 'concerns about stopping', 'burden', and 'appropriateness' factor, with a stronger loading to the 'burden' > 'concerns about stopping' > 'appropriateness' factor. As it clinically makes limited sense that item 22 should belong to either the 'burden' or 'appropriateness' factor, it seems that there may be challenges related to this item. Recent qualitative literature has shown that the nursing home population generally prefers to leave deprescribing decisions to their physician and that most nursing home residents display a high degree of trust in their physician.<sup>49</sup> The high degree of trust is also reflected in this study where 74% answered 'disagree' or 'strongly disagree' to item 22, and the median Abbreviated Wake Forest Trust in Physician score was 77 (IQR 80–90). A similar answer distribution was found in the French version (that is, the majority of participants answered 'disagree' or 'strongly disagree'), including a weighted kappa coefficient of 0.09, indicating poor test-retest reliability.<sup>48</sup> Thus, it seems that this item may be less relevant for a population of older patients.

Despite different patient populations and settings, the internal consistency of the proposed model (model 3) was similar to the internal consistency of the original rPATD questionnaire as well as the French version, where a slightly lower  $\alpha$  ( $<0.7$ ) was also found for the 'concerns about stopping' factor.<sup>24,48</sup> As hypothesized by Reeve et al., the lower internal consistency of the 'concerns about stopping' factor may indicate that there is no single belief that influences how the items in this factor are answered, or that the underlying belief may include concerns other than just concerns about stopping a treatment.<sup>24</sup> In terms of the latter, and similar to the findings by Reeve et al., we found a weak positive correlation between the 'concerns about stopping' score and the BMQ Specific-Concern score (0.19), indicating that some nursing residents may have concerns about both stopping and taking their medication.<sup>24</sup> Qualitative studies have shown that older people, including nursing home residents, often report such conflicting attitudes, that is, they consider their medication necessary but at the same time would like to take fewer drugs.<sup>49–53</sup> Thus, this is, in part, what may be reflected by the correlation as well as the lower  $\alpha$  for the 'concerns about stopping' factor.

The proposed model (model 3) showed acceptable construct validity. We failed to prove hypothesis 1 (that a higher 'burden' score would correlate positively with a higher Abbreviated Wake Forest Trust in Physician score) as well as hypothesis 5 and 8 (that a lower 'concerns about stopping' factor would correlate negatively with a higher BMQ Specific-Concern score and a larger number of regular medications, respectively) ([Appendix A](#)); however, as mentioned above, a possible explanation for this may be the conflicting attitudes of older people.<sup>49–53</sup>

### Strengths and limitations

The principal strength of our study is the application of established guidelines and quality criteria for translation and cross-cultural adaptation as well as validation of the study,<sup>28,40</sup> respectively. Further, although the original rPATD questionnaire was developed for self-administration,<sup>24</sup> our data collection method allowed us to get insight into the reasons for how the nursing home residents responded to different items, which we could use in the interpretation of our findings.



**Fig. 1.** Score distribution for the four factors in the proposed model of the revised Patients' Attitudes Towards Deprescribing (rPATD) questionnaire (model 3).<sup>a</sup>  
<sup>a</sup>Item 9 and 10 are excluded from the 'burden' factor (see the Results section for details). The exclusion of items has been taking into account in the calculation of scores.

**Table 4**

Correlations<sup>a</sup> between the revised Patients' Attitudes Towards Deprescribing (rPATD) questionnaire factor scores and scores for additional instruments and baseline characteristics.

	'Burden' score			'Concerns about stopping' score			'Appropriateness' score		
	Hypothesis <sup>b</sup>	Expected	Observed	Hypothesis <sup>b</sup>	Expected	Observed	Hypothesis <sup>b</sup>	Expected	Observed
Discriminant validity <sup>c</sup>									
Abbreviated Wake Forest Trust in Physician score	1	<0.3	-0.11	2	>-0.3	-0.012	3	<0.3	0.23
BMQ Specific-Concerns score	4	0.3-0.5	0.47	5	-0.3;-0.5	0.19	6	-0.3;-0.5	-0.43
Discriminative validity <sup>d</sup>									
Number of regular medications	7	0.3-0.5	0.40	8	-0.3;-0.5	0.31	9	>-0.3	-0.15

BMQ, Beliefs about Medicines Questionnaire; rPATD, revised Patients' Attitudes Towards Deprescribing.

<sup>a</sup> Correlations are calculated as Spearman's rank correlation coefficient: <0.3: Weak correlation; 0.3-0.5: Moderate correlation; >0.5: Strong correlation.<sup>42</sup>

<sup>b</sup> Hypotheses are presented in Appendix A.

<sup>c</sup> Hypothesis is based on measurements with different constructs.<sup>30</sup>

<sup>d</sup> Hypothesis is based on differences between participants.<sup>30</sup>

Several limitations to our study should also be acknowledged. First, as data was collected by interview, this introduces the possibility of social desirability bias, that is, participants feeling swayed to respond what is perceived to be socially acceptable.<sup>54</sup> Second, nursing staff initially selected residents for screening for study participation based on a consideration of general health and cognitive function; however, the staff's assessment of residents' capabilities may have differed, which may have excluded potential participants. Also, as only a small part of residents was initially selected for screening and ultimately included (on average, six residents per nursing home were included), this may limit generalizability of our results, as these residents probably represent a part with less cognitive impairment, and thus less frailty, compared to the general Danish nursing home population. Generalizability may also be limited by the fact that recruitment was restricted to Southern Denmark; however, as participants were recruited from nursing homes of varying size and from both urban and rural areas, we expect this to be of minor influence. Finally, generalizability may also be limited by our

sample not being representative of all populations of older people with limited life expectancy. Third, during the data collection, we experienced that some residents had difficulties using the response options 'disagree' and 'strongly disagree' and that they repeatedly needed explanation on how to use them. Ideally, we would have discovered this problem during the pilot study, which would have allowed us to adjust the scale to improve the understanding. However, although the authors of the French version made minor changes to the response options based on their pilot study, they still experienced that more than half of the patients needed assistance in completing the questionnaire due to misunderstanding of the response options as well as some of the items.<sup>48</sup> Finally, for items related to thoughts on appropriateness of using/stopping a treatment (e.g. item 13 and 15), we encountered that some residents would immediately state the necessity of their medication, with reference to their physician having prescribed it. To avoid misunderstanding of these questions, a thorough explanation of the meaning was thus required, indicating potentially inadequate question wording.

### Implications for research and practice

Despite different patient populations and settings, we found results very similar to that of both the original rPATD questionnaire<sup>24</sup> and the French version.<sup>48</sup> Based on this, it seems unclear whether the items in the ‘concerns about stopping’ factor should actually be represented by a factor rather than being presented as individual items. This also applies for item 16. Thus, if a further revision of the questionnaire was to be made, this should examine whether the factor structure can be further improved. Moreover, we experienced that some items as well as the response options were difficult to understand for a subgroup of the residents and that they consequently needed assistance in completing the questionnaire. As this was also experienced in the French version,<sup>48</sup> a further revision could also focus on simplifying the questionnaire. Finally, based on the fact that relatives often have a pronounced role in managing medication of Danish nursing home residents, it may also be relevant to make a Danish caregiver version of the rPATD questionnaire.

Although we propose a modified model of the original rPATD questionnaire, we believe that all items may still be relevant for some patients and that the full questionnaire thus can be useful in clinical practice. Prescribing for older people reaching the last years of life should be focused on maintaining functional level and improving quality of life, and identifying and addressing specific concerns of the patients thus constitute a main priority. For such use, single items or selected parts of the rPATD questionnaire may also be used to initiate deprescribing conversations, identify barriers and enablers, and aid clinical decision making among this population.

### Conclusions

We successfully translated and cross-culturally adapted the rPATD questionnaire into Danish. A factor analysis revealed a 4-factor structure similar to the original rPATD questionnaire; however, to adjust the model to the Danish nursing home population and health care system, we omitted two items, concerning medication expenses and inconvenience of taking medication. The final model generally showed acceptable structural validity, construct validity, and internal consistency, while no floor and ceiling effects were identified. Our results thereby support the Danish version of the rPATD questionnaire as a valid and reliable tool to explore beliefs and attitudes towards deprescribing among older people with limited life expectancy.

### Funding

This work was supported by VELUX FONDEN [grant no. 00018248].

### CRediT authorship contribution statement

**Carina Lundby:** Conceptualization, Methodology, Investigation, Formal analysis, Writing - original draft, Writing - review & editing, Project administration. **Trine Simonsen:** Investigation, Writing - review & editing. **Jesper Ryg:** Conceptualization, Methodology, Writing - review & editing. **Jens Søndergaard:** Conceptualization, Methodology, Writing - review & editing. **Anton Pottegård:** Conceptualization, Methodology, Formal analysis, Writing - review & editing, Funding acquisition. **Henrik Hein Lauridsen:** Conceptualization, Methodology, Formal analysis, Writing - review & editing.

### Declaration of competing interest

Carina Lundby, Trine Simonsen, Jesper Ryg, Jens Søndergaard, Anton Pottegård, and Henrik Hein Lauridsen have nothing to disclose.

### Acknowledgements

The authors thank the four translators for help with the translation of

the rPATD questionnaire and the Abbreviated Wake Forest Trust in Physician Scale into Danish. Further, the authors thank all nursing homes and municipalities for help with recruitment of participants. Finally, the authors thank all nursing home residents for participation in the study.

### Appendices A and B. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.sapharm.2020.11.001>.

### References

- Lee SJ, Leipzig RM, Walter LC. Incorporating lag time to benefit into prevention decisions for older adults. *J Am Med Assoc.* 2013;310(24):2609–2610. <https://doi.org/10.1001/jama.2013.282612>.
- Holmes HM, Min LC, Yee M, et al. Rationalizing prescribing for older patients with multimorbidity: considering time to benefit. *Drugs Aging.* 2013;30(9):655–666. <https://doi.org/10.1007/s40266-013-0095-7>.
- Hilmer SN, McLachlan AJ, Le Couteur DG. Clinical pharmacology in the geriatric patient. *Fundam Clin Pharmacol.* 2007;21(3):217–230. <https://doi.org/10.1111/j.1472-8206.2007.00473.x>.
- Holmes HM, Hayley DC, Alexander GC, Sachs GA. Reconsidering medication appropriateness for patients late in life. *Arch Intern Med.* 2006;166(6):605–609. <https://doi.org/10.1001/archinte.166.6.605>.
- Scott IA, Hilmer SN, Reeve E, et al. Reducing inappropriate polypharmacy: the process of deprescribing. *JAMA Intern Med.* 2015;175(5):827–834. <https://doi.org/10.1001/jamainternmed.2015.0324>.
- Reeve Gnjidic D, Long J, Hilmer S. A systematic review of the emerging definition of “deprescribing” with network analysis: implications for future research and clinical practice. *Br J Clin Pharmacol.* 2015;80(6):1254–1268. <https://doi.org/10.1111/bcp.12732>.
- Gnjidic D, Reeve E. Deprescribing: what do we know, and where to next? *Br J Clin Pharmacol.* 2020. <https://doi.org/10.1111/bcp.14525> [Epub ahead of print].
- Thillainadesan J, Gnjidic D, Green S, Hilmer SN. Impact of deprescribing interventions in older hospitalised patients on prescribing and clinical outcomes: a systematic review of randomised trials. *Drugs Aging.* 2018;35(4):303–319. <https://doi.org/10.1007/s40266-018-0536-4>.
- Iyer S, Naganathan V, McLachlan AJ, Le Couteur DG. Medication withdrawal trials in people aged 65 years and older: a systematic review. *Drugs Aging.* 2008;25(12):1021–1031. <https://doi.org/10.2165/0002512-200825120-00004>.
- van der Cammen TJM, Rajkumar C, Onder G, Sterke CS, Petrovic M. Drug cessation in complex older adults: time for action. *Age Ageing.* 2014;43(1):20–25. <https://doi.org/10.1093/ageing/aft166>.
- Lundby C, Jensen J, Larsen SP, Hoffmann H, Pottegård A, Reilev M. Use of medication among nursing home residents: a Danish drug utilisation study. *Age Ageing.* 2020. <https://doi.org/10.1093/ageing/afaa029>.
- Gallagher P, Barry P, O'Mahony D. Inappropriate prescribing in the elderly. *J Clin Pharm Therapeut.* 2007;32(2):113–121. <https://doi.org/10.1111/j.1365-2710.2007.00793.x>.
- Poudel A, Yates P, Rowett D, Nissen LM. Use of preventive medication in patients with limited life expectancy: a systematic review. *J Pain Symptom Manag.* 2017;53(6):1097–1110. <https://doi.org/10.1016/j.jpainsymman.2016.12.350>. e1.
- Tjia J, Briesacher BA, Peterson D, Liu Q, Andrade SE, Mitchell SL. Use of medications of questionable benefit in advanced dementia. *JAMA Intern Med.* 2014;174(11):1763–1771. <https://doi.org/10.1001/jamainternmed.2014.4103>.
- Todd A, Husband A, Andrew I, Pearson S-A, Lindsey L, Holmes H. Inappropriate prescribing of preventative medication in patients with life-limiting illness: a systematic review. *BMJ Support Palliat Care.* 2017;7(2):113–121. <https://doi.org/10.1136/bmjspcare-2015-000941>.
- Morin L, Larocche M-L, Texier G, Johnell K. Prevalence of potentially inappropriate medication use in older adults living in nursing homes: a systematic review. *J Am Med Dir Assoc.* 2016;17(9):862.e1–862.e9. <https://doi.org/10.1016/j.jamda.2016.06.011>.
- Lundby C, Graabæk T, Ryg J, Søndergaard J, Pottegård A, Nielsen DS. Health care professionals' attitudes towards deprescribing in older patients with limited life expectancy: A systematic review. *Br J Clin Pharmacol.* 2019;85(5):868–892. <https://doi.org/10.1111/bcp.13861>.
- Lundby C, Graabæk T, Ryg J, Søndergaard J, Pottegård A, Nielsen DS. ... Above All, It's a Matter of This Person's Quality of Life": Health Care Professionals' Perspectives on Deprescribing in Older Patients With Limited Life Expectancy. *The Gerontologist.* 2020;60(3):439–449. <https://doi.org/10.1093/geront/gnz116>.
- Burghle A, Lundby C, Ryg J, et al. Attitudes Towards Deprescribing Among Older Adults with Limited Life Expectancy and Their Relatives: A Systematic Review. *Drugs Aging.* 2020;37(7):503–520. <https://doi.org/10.1007/s40266-020-00774-x>.
- Reeve T, Hendrix I, Shakib S, Roberts MS, Wiese MD. Patient barriers to and enablers of deprescribing: a systematic review. *Drugs Aging.* 2013;30(10):793–807. <https://doi.org/10.1007/s40266-013-0106-8>.
- Paque K, Vander Stichele R, Elseviers M, et al. Barriers and enablers to deprescribing in people with a life-limiting disease: a systematic review. *Palliat Med.* 2019;33(1):37–48. <https://doi.org/10.1177/0269216318801124>.



22. Reeve E, Shakib S, Hendrix I, Roberts MS, Wiese MD. Review of deprescribing processes and development of an evidence-based, patient-centred deprescribing process. *Br J Clin Pharmacol*. 2014;78(4):738–747. <https://doi.org/10.1111/bcp.12386>.
23. Jansen J, Naganathan V, Carter SM, et al. Too much medicine in older people? Deprescribing through shared decision making. *BMJ*. 2016;353:i2893. <https://doi.org/10.1136/bmj.i2893>.
24. Reeve E, Low L-F, Shakib S, Hilmer SN. Development and validation of the revised patients' attitudes towards deprescribing (rPATD) questionnaire: versions for older adults and caregivers. *Drugs Aging*. 2016;33(12):913–928. <https://doi.org/10.1007/s40266-016-0410-1>.
25. Reeve E, Shakib S, Hendrix I, Roberts MS, Wiese MD. Development and validation of the patients' attitudes towards deprescribing (PATD) questionnaire. *Int J Clin Pharm*. 2013;35(1):51–56. <https://doi.org/10.1007/s11096-012-9704-5>.
26. Reeve E, Wolff JL, Skehan M, Bayliss EA, Hilmer SN, Boyd CM. Assessment of attitudes toward deprescribing in older medicare beneficiaries in the United States. *JAMA Intern Med*. 2018;178(12):1673–1680. <https://doi.org/10.1001/jamainternmed.2018.4720>.
27. Reeve E, Low L-F, Hilmer SN. Attitudes of older adults and caregivers in Australia toward deprescribing. *J Am Geriatr Soc*. 2019;67(6):1204–1210. <https://doi.org/10.1111/jgs.15804>.
28. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*. 2000;25(24):3186–3191.
29. Collins D. Pretesting survey instruments: an overview of cognitive methods. *Qual Life Res*. 2003;12(3):229–238. <https://doi.org/10.1023/A:1023254226592>.
30. de Vet HCW, Terwee CB, Mokkink LB, Knol DL. *Measurement in Medicine: A Practical Guide*. Cambridge University Press; 2011. <https://doi.org/10.1017/CBO9780511996214>.
31. Dugan E, Trachtenberg F, Hall MA. Development of abbreviated measures to assess patient trust in a physician, a health insurer, and the medical profession. *BMC Health Serv Res*. 2005;5:64. <https://doi.org/10.1186/1472-6963-5-64>.
32. Reilev M, Lundby C, Jensen J, Larsen SP, Hoffmann H, Pottegård A. Morbidity and mortality among older people admitted to nursing home. *Age Ageing*. 2019;49(1):67–73. <https://doi.org/10.1093/ageing/afz136>.
33. Achterberg WP, Everink IH, van der Steen JT, Gordon AL. We're all different and we're the same: the story of the European nursing home resident. *Age Ageing*. 2019;49(1):3–4. <https://doi.org/10.1093/ageing/afz145>.
34. The Danish Ministry of Social Affairs. Consolidation act on social services. Accessed June 27, 2019 <http://english.sm.dk/media/14900/consolidation-act-on-social-services.pdf>.
35. Katzman R, Brown T, Fuld P, Peck A, Schechter R, Schimmel H. Validation of a short Orientation-Memory-Concentration Test of cognitive impairment. *Am J Psychiatr*. 1983;140(6):734–739. <https://doi.org/10.1176/ajp.140.6.734>.
36. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inf*. 2009;42(2):377–381. <https://doi.org/10.1016/j.jbi.2008.08.010>.
37. Horne R, Weinman J, Hankins M. The beliefs about medicines questionnaire: the development and evaluation of a new method for assessing the cognitive representation of medication. *Psychol Health*. 1999;14(1):1–24. <https://doi.org/10.1080/08870449908407311>.
38. Kent P, Lauridsen HH. Managing missing scores on the roland morris disability questionnaire. *Spine*. 2011;36(22):1878–1884. <https://doi.org/10.1097/BRS.0b013e3181ffe53f>.
39. Bollen KA. *Structural Equations with Latent Variables*. Wiley; 1989.
40. Mokkink LB, Terwee CB, Knol DL, et al. The COSMIN checklist for evaluating the methodological quality of studies on measurement properties: a clarification of its content. *BMC Med Res Methodol*. 2010;10(1):22. <https://doi.org/10.1186/1471-2288-10-22>.
41. Thompson B. *Exploratory and Confirmatory Factor Analysis: Understanding Concepts and Applications*. American Psychological Association; 2004.
42. Cohen J. *Statistical Power Analysis for the Behavioral Sciences*. Lawrence Erlbaum Associates; 1988.
43. Terwee CB, Mokkink LB, Knol DL, Ostelo RWJG, Bouter LM, de Vet HCW. Rating the methodological quality in systematic reviews of studies on measurement properties: a scoring system for the COSMIN checklist. *Qual Life Res*. 2012;21(4):651–657. <https://doi.org/10.1007/s11136-011-9960-1>.
44. Edelman M, Jellema P, Hak E, Denig P, Blanker MH. Patients' attitudes towards deprescribing alpha-blockers and their willingness to participate in a discontinuation trial. *Drugs Aging*. 2019;36(12):1133–1139. <https://doi.org/10.1007/s40266-019-00712-6>.
45. Kua KP, Saw PS, Lee SWH. Attitudes towards deprescribing among multi-ethnic community-dwelling older patients and caregivers in Malaysia: a cross-sectional questionnaire study. *Int J Clin Pharm*. 2019;41(3):793–803. <https://doi.org/10.1007/s11096-019-00829-z>.
46. Tegegn HG, Tefera YG, Erku DA, et al. Older patients' perception of deprescribing in resource-limited settings: a cross-sectional study in an Ethiopia university hospital. *BMJ Open*. 2018;8(4), e020590. <https://doi.org/10.1136/bmjopen-2017-020590>.
47. Nusair MB, Arabyat R, Al-Azzam S, El-Hajji FD, Nusir AT, Al-Batineh M. Translation and psychometric properties of the Arabic version of the revised Patients' Attitudes towards Deprescribing questionnaire. *J Pharm Health Serv Res. Published online February*. 2020;3:12340. <https://doi.org/10.1111/jphs.12340>.
48. Roux B, Sirois C, Niquille A, et al. Cross-cultural adaptation and psychometric validation of the revised Patients' Attitudes Towards Deprescribing (rPATD) questionnaire in French. *Res Soc Adm Pharm*. 2020. <https://doi.org/10.1016/j.sapharm.2020.11.004>. In press.
49. Thompson W, Jacobsen IT, Jarbøl DE, Haastруп P, Nielsen JB, Lundby C. Nursing Home Residents' Thoughts on Discussing Deprescribing of Preventive Medications. *Drugs Aging*. 2020;37(3):187–192. <https://doi.org/10.1007/s40266-020-00746-1>.
50. Moen J, Bohm A, Tillenius T, Antonov K, Nilsson JLG, Ring L. "I don't know how many of these [medicines] are necessary." - a focus group study among elderly users of multiple medicines. *Patient Educ Counsel*. 2009;74(2):135–141. <https://doi.org/10.1016/j.pec.2008.08.019>.
51. Bagge M, Tordoff J, Norris P, Heydon S. Older people's attitudes towards their regular medicines. *J Prim Health Care*. 2013;5(3):234–242.
52. Reeve Low L-F, Hilmer SN. Beliefs and attitudes of older adults and carers about deprescribing of medications: a qualitative focus group study. *Br J Gen Pract*. 2016;66(649):e552–560. <https://doi.org/10.3399/bjgp16X685669>.
53. Goyal P, Requijo T, Siceloff B, et al. Patient-reported barriers and facilitators to deprescribing cardiovascular medications. *Drugs Aging*. 2020;37(2):125–135. <https://doi.org/10.1007/s40266-019-00729-x>.
54. Bergen N, Labonté R. "Everything is perfect, and we have No problems": detecting and limiting social desirability bias in qualitative research. *Qual Health Res*. 2020;30(5):783–792. <https://doi.org/10.1177/1049732319889354>.