Oral health and oral care in patients in a surgical context: A quantitative study comparing patients' and nurses' assessments

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Abstract

Aims: To investigate fundamental care delivery regarding oral care in a surgical context, and to compare patients' self-reported oral health with registered nurse assessments.

Design: A descriptive and comparative study, with a consecutive selection.

Methods: A patient oral health rating tool, including questions about performed oral care, was distributed to patients (n = 50), at four surgical wards in Sweden. The response rate was 72%. Oral health status was assessed by a registered nurse using the Revised Oral Assessment Guide (ROAG), and a comparison between patient and registered nurse assessment was performed by calculating Cohen's kappa coefficient and percentage agreement.

Results: Patients (38%) reported severe oral symptoms, mostly dry lips and not an adequate amount of saliva, and 80% were not offered help with oral care. ROAG assessments revealed that 74% had problems with oral health. Almost half of the patients (48%) needed assistance with oral care but only 10% received help. Registered nurses assessed the patient's oral health as worse than the patient's self-assessment did.

Conclusion: There are deficiencies in fundamental care delivery regarding oral care in a surgical care context. Oral health assessments need to be performed by registered nurses. Routines for systematic oral assessments and for oral care need to be implemented by nurse managers to ensure that patients' fundamental care needs are fulfilled.

Implications for the Profession and Patient Care: Oral health assessments need to be performed regularly by registered nurses since it is insufficient that patients self-assess their oral health. Nurse managers need to provide and implement routines for nurse assessments and oral care in surgical care contexts.
Impact: There are deficiencies in patients’ oral health and oral care, and registered nurses need to perform oral health assessments. Nurse managers need to implement routines for registered nurse assessments and oral care.

Patient Contribution: Patients admitted to a surgical ward were included in the study after being screened for inclusion criteria. After participants signed informed consent, they filled in a questionnaire about oral health and oral care, and a registered nurse performed an oral health assessment.

Reporting Method: This study was carried out according to the STROBE checklist.

KEYWORDS: fundamental care, missed nursing care, nurse management, oral care, oral health, quantitative method

1 | INTRODUCTION

For patients’ well-being and recovery after surgery, it is important that patients’ fundamental care needs are fulfilled. Oral health is a fundamental care issue and could be considered an important care quality indicator. Fundamental care delivery needs to be seen as the minimum standard of care, and factors within the system, for example management, are responsible for ensuring the delivery. There is a lack of accurate tools to measure the experience and outcome of both received and delivered fundamental care (Muntlin Athlin, 2018; Richards et al., 2018), therefore, care-sensitive indicators need to be developed and validated (Kitson et al., 2022). There is a lack of studies investigating oral health and the delivery of oral care in a surgical context. Measuring selected parts of fundamental care may direct forthcoming interventions to improve care.

2 | BACKGROUND

Oral health is part of people’s general health and affects well-being and how a person communicates, eats, chews, swallows and experiences taste (Gil-Montoya et al., 2015). Oral problems are common in older persons (Koistinen et al., 2019) and in persons in need of help with self-care, not only due to a decline in abilities such as sight, mobility and cognitive function but also due to high drug use, decreased salivation, fewer teeth, difficulties chewing and swallowing, pain and changed taste (Gil-Montoya et al., 2015; Koistinen et al., 2019). Dry mouth is the third most common drug side effect, and lack of saliva reduces infection defence (Gil-Montoya et al., 2015). Studies in the context of high-technology care demonstrate the importance of oral care in intubated patients in intensive care units (Munro & Grap, 2004; Tuom et al., 2017). Only few studies have investigated oral health in a surgical context. Wren et al. (2010) showed that systematic oral care decreases the number of patients with pneumonia fourfold, and Ball et al. (2016) stated that oral care is deprioritised within surgical care. Impaired oral health is associated with malnutrition (Gil-Montoya et al., 2015), and a compromised nutritional status is a risk factor for postoperative complications (Weimann et al., 2017). Systematic oral health assessments may not be performed regularly or performed only if patients complain about problems with their mouths (Andersson et al., 2004; Ohrn et al., 2001).

The Fundamentals of Care (FoC) framework was developed in response to worrying reports of poor levels of care, particularly missed fundamental care (Feo et al., 2018; Kitson et al., 2010, 2013). The conceptual framework, focussing on the delivery of person-centred fundamental care, includes three dimensions: establishing a relationship, addressing fundamental needs (the patient’s psychosocial and physical needs and relational aspects in meeting the needs), and the context of care. The latter dimension illustrates that the context of care, including system- and policy-level factors, can hinder or enable the delivery of fundamental care to patients (Feo et al., 2018; Kitson et al., 2010, 2013). It has been shown that fundamental care is one of the first things to be neglected when the workload is high (Bagnasco et al., 2020). In accordance with their licence, the registered nurse (RN) in Sweden is responsible for delivering high-quality fundamental care to patients. In a recent publication (Kitson et al., 2022), it is stated that fundamental care delivery needs to be seen as the minimum standard of care, and factors within the system (e.g. management) are responsible for ensuring the delivery. The statement stresses a need for improved nursing management, where a clear advocate for person-centred fundamental care is expressed. Furthermore, fundamental care-sensitive indicators need
to be developed, to be able to continuously measure and report the outcome of fundamental care delivery (Kitson et al., 2022).

Oral health could be considered an important care quality indicator and is certainly a fundamental care issue. Assessing oral health, and taking necessary action, is a joint responsibility between RNs and nurse management. There is sparse knowledge about patients’ oral health and received oral care in patients in a surgical care context, and it is unknown whether patients’ self-reported oral health will suffice, or if there is a need for RN assessment. Measuring selected parts of fundamental care may direct forthcoming interventions to improve care—in this case, care of oral health.

3 | THE STUDY

3.1 | Aim

The aims of this study is to investigate fundamental care delivery regarding oral care in a surgical context in Sweden and to compare patients’ self-reported oral health with RN assessments.

Research questions:

1. How does the patient rate their oral health and oral care?
2. How does the RN assess the patient’s oral health?
3. What is the conformity between oral health self-assessments by patients and assessments performed by RNs?

4 | METHODS

4.1 | Study design and setting

This is a descriptive and comparative study, with a consecutive selection, and it was conducted in accordance with the STROBE statement—checklist of items that should be included in reports of observational studies (Appendix S1). This single-centre study was conducted in a large university hospital in Sweden, in March 2022.

Patients (n = 50) from four surgical wards, with either acute medical conditions or admitted for elective surgery, were included. Transplantation (liver and kidney), oesophagus/ventricle, liver/biliary, colorectal, vascular, endocrine, urological and acute surgery were performed at the wards. A nurse manager had overall responsibility for the fundamental care provided. The number of patients in a ward varied between 12 and 27, and a team of one RN and one nurse assistant was responsible for approximately 5–7 patients. In Sweden, a nurse licence requires a university bachelor’s degree (3 years). RNs are responsible for leading and assessing nursing, while the nurse assistants most often perform patients’ fundamental care needs.

There were no written guidelines for oral care in the wards, but when screening patients at admission, a question about dentures was included. The assistant nurses supported the patients with personal hygiene matters, in which oral care should be included, both morning and evening.

4.2 | Measuring instruments

Patients rated their oral health by filling in a self-assessment tool, and oral health was also assessed by a RN. The patients’ oral health rating questionnaire included 21 questions; background information, judgement of oral health and performed oral care (Appendix S2). Ten of the questions came from an instrument designed by Koset al. (1996) and were further modified and translated (Ohrn et al., 2001; Paulsson et al., 2007), with good reliability indicated by a Cronbach’s alpha exceeding .60 (Ohrn et al., 2001). These 10 questions captured patient experiences of oral problems concerning pain, mouth dryness, saliva consistency, lips, swallowing, changes in taste, ability to speak, ability to perform oral care, oral mucosa and experience of a clean mouth. A Likert numerical rating scale (NRS) ranging from 0 to 10 was used to measure symptoms, where 0 equalled ‘no discomfort’, and 10 equalled ‘worst conceivable discomfort’.

The nurses’ oral health assessments were performed by two RNs, using the Revised Oral Assessment Guide-Jönköping (ROAG-J) to assess nine items; voice, lips, oral mucosa, tongue, gums, teeth, dentures, saliva and swallowing. Every item was assessed on a scale of 0–3, where 0 = not able to assess, 1 = healthy/normal condition, 2 = moderate change/ill oral health, and 3 = severe change/ill oral health. According to ROAG-J, nurses are advised to assist the patient with oral care when a 2 is assessed, and appropriate care actions are proposed. When a 3 is assessed in any category, referral to a dentist is advised. The reliability of ROAG-J has demonstrated a Cronbach’s alpha of .87 (Andersson et al., 1999), and specificity and sensitivity are high for the revised version ROAG-J (Ribeiro et al., 2014).

4.3 | Eligible patients

Inclusion criteria comprised patients admitted to a surgical ward for >24 h, who understood the Swedish language, both in speaking and writing. Exclusion criteria comprised children (<18 years old), patients not oriented to time and space, and patients with an ascertained or suspected COVID-19 infection.

4.4 | Data collection and statistical analysis

Data collection was performed by two master students (both RNs familiar with the hospital). The assistant nurse manager in each ward was addressed about eligible patients, according to inclusion and exclusion criteria, and the RN in charge of the patient was consulted before speaking to the patient. Written and oral information
was given about the study. The patient was left for 30 min to fill in the oral health assessment and the consent form. On collecting the form, the RN performed the nurse's oral health assessment. In 10 cases, at the patient's request, the patient's oral health assessment was read out loud to them. The oral health assessments were coded, and all documentation was kept in a locked cabinet.

The items in ROAG-J were compared with the corresponding item from the patient self-assessment tool (Table 1). The assessments in ROAG-J were dichotomised; 1 = levels 0 and 1 (healthy) and 2 = levels 2 and 3 (oral health problems). The patients' ratings were dichotomised; 1 = levels 0–5 (no/mild symptoms) and 2 = levels 6–10 (severe symptoms) in concordance with Paulsson et al. (2007).

The results were compiled in Excel and analysed using the Statistical Package for Social Sciences (SPSS) version 24.0 (Chicago, IL, USA). Descriptive statistics (mean, SD, frequencies and percentages) were used when describing the data. Cohen's kappa coefficient and percentage agreement were calculated as a measurement of the agreement between the RN and the patient assessments (McHugh, 2012).

### 4.5 | Ethical considerations

This study was approved by the Swedish Ethical Review Authority (Dnr.2021–04932). All participants provided informed written consent, were guaranteed confidentiality, and the right to withdraw from the study at any time. Guidelines for reporting parallel-group randomised trials.

### 5 | RESULTS

In total, 69 patients met the inclusion criteria at first; two patients were considered not orientated to time and space and were excluded. Fifty patients accepted the invitation to take part in the study, resulting in a response rate of 75%. Patients declined to participate in the study due to fatigue (n=6), pain (n=2), other reasons (n=6), and no reason (n=3). Of the 50 patients who participated, 27 (54%) were women and 23 (46%) were men. The mean age was 67 years (SD = 14.6), with a range of 21–87 years.

<table>
<thead>
<tr>
<th>Questions on the patient rating form</th>
<th>Categories on the staff assessment form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q6, Can talk normally</td>
<td>Voice</td>
</tr>
<tr>
<td>Q7, Lips are very moist</td>
<td>Lips</td>
</tr>
<tr>
<td>Q3, No mouth pain</td>
<td>Oral mucosa</td>
</tr>
<tr>
<td>Q12, The gum feels normal</td>
<td>Gums</td>
</tr>
<tr>
<td>Q9, Can brush my teeth</td>
<td>Teeth</td>
</tr>
<tr>
<td>Q4, Adequate amount of saliva</td>
<td>Saliva</td>
</tr>
<tr>
<td>Q8, Can swallow easily</td>
<td>Swallowing</td>
</tr>
</tbody>
</table>

### 5.1 | Patient ratings of oral health

The majority of the patients (62%) rated their oral health as good with no/mild symptoms (NRS 0–5). One or more severe symptoms (NRS 6–10) were reported by 38% of the patients. Dry lips occurred most often (24%), followed by an inadequate amount of saliva (20%). Severe problems were also detected with the consistency of saliva (12%), the taste in the mouth (12%), and the cleanliness of the mouth (12%). For all 10 items investigated, severe symptoms of oral ill health were detected among the patients. For 8 of 10 items, at least one patient gave a rating of 10, which was the worst conceivable discomfort. There was no difference (p = .9) in age for patients with no/mild symptoms (mean 67.1, SD 14.2) compared to patients with severe symptoms (mean 67.5, SD 15.7). Table 2 shows how patients (n=50) rated their oral health by NRS 0–10, for 10 different items.

Five patients (10%) found that their oral health negatively impacted their ability to talk normally. Three patients (6%) experienced severe pain in the mouth (NRS 6). Three patients (6%) experienced problems with swallowing, and four patients (8%) experienced irritated gums. Two patients (4%) had difficulties with brushing their teeth. There were no differences in rated oral health in any of the 10 variables between women (n=27) and men (n=23; data not shown).

### 5.2 | Oral care at the surgical wards

Patients' rating of oral care is presented in Figure 1. Thirty per cent of the patients had not brushed their teeth the previous night, and 36% had not brushed their teeth that morning. Forty-four per cent of the patients answered the open question about why they had not brushed their teeth. The most common answers (20%) were forgetting/nobody reminded them, and pain/low energy (16%). Forty per cent of the patients had changed their teeth-brushing habits during their stay in the hospital.

A majority of patients (54%) had not been asked by any personnel, if they wanted to brush their teeth, and almost half of the patients (48%) had not been asked if they needed a toothbrush or dental paste. Ten patients (20%) had been asked if they needed help with oral care, leaving the majority (80%) without any offer of assistance with oral care. Only five patients (10%) had received help with oral care. Healthcare personnel asked four patients (8%) how their mouths felt.

### 5.3 | Nurse assessments of oral health

ROAG assessments were performed by RNs for all patients (n = 50) (Table 3). Thirteen patients (26%) were assessed with at least one level 3 rating, regarding oral mucosa, tongue, teeth, dentures and saliva. Additionally, in all nine categories, 24 patients (48%) needed
TABLE 2  Oral health rated by patients (n = 50) by NRS 0–10.

<table>
<thead>
<tr>
<th>NRS</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>42</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Adequate amount of saliva</td>
<td>27</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Saliva feels normal</td>
<td>34</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>I can talk normally</td>
<td>37</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Moisturised lips</td>
<td>23</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>I can swallow</td>
<td>36</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>I can brush my teeth</td>
<td>42</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Good taste in my mouth</td>
<td>34</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Mouth feels clean</td>
<td>25</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Gum feels like normal</td>
<td>38</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

*0 = no discomfort, 10 = worst possible discomfort.

TABLE 3  ROAG assessments by registered nurse.

<table>
<thead>
<tr>
<th>ROAG</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice</td>
<td>0</td>
<td>36</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>Lips</td>
<td>0</td>
<td>28</td>
<td>22</td>
<td>0</td>
</tr>
<tr>
<td>Oral mucosa</td>
<td>0</td>
<td>36</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Tongue</td>
<td>0</td>
<td>34</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Gum</td>
<td>3</td>
<td>42</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Teeth</td>
<td>6</td>
<td>21</td>
<td>17</td>
<td>6</td>
</tr>
<tr>
<td>Dentures</td>
<td>37</td>
<td>7</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Saliva</td>
<td>0</td>
<td>34</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>Swallowing</td>
<td>2</td>
<td>47</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

*0 = not able to assess, 1 = healthy or normal condition, 2 = moderate ill health, 3 = severe ill health.

5.4  Comparison between oral health assessment performed by RN and patient self-assessment

Conformity and the kappa coefficient between patients’ oral health ratings and the RN assessments are presented in Table 4. The level of percentage agreement varied between 50% and 96%. The kappa coefficient showed minimal agreement for teeth (<.39), moderate agreement for voice, lips, oral mucosa, and saliva (between .4 and .79), and strong agreement for gum and swallowing (> .80).

FIGURE 1  Patients’ (n = 50) rating of oral care.

oral care by healthcare personnel (rated with at least one level 2). Thirteen patients (26%) were assessed as having good oral health.
### Table 4

Comparison between assessments of oral health by patients (n = 50) and registered nurses.

<table>
<thead>
<tr>
<th></th>
<th>Conformity (%)</th>
<th>Patients rated worse (%)</th>
<th>Patients rated better (%)</th>
<th>Kappa coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice</td>
<td>82</td>
<td>0</td>
<td>18</td>
<td>.75</td>
</tr>
<tr>
<td>Lips</td>
<td>68</td>
<td>6</td>
<td>26</td>
<td>.44</td>
</tr>
<tr>
<td>Oral mucosa</td>
<td>74</td>
<td>2</td>
<td>24</td>
<td>.65</td>
</tr>
<tr>
<td>Gum</td>
<td>86</td>
<td>6</td>
<td>8</td>
<td>.83</td>
</tr>
<tr>
<td>Teeth</td>
<td>50</td>
<td>4</td>
<td>46</td>
<td>.30</td>
</tr>
<tr>
<td>Saliva</td>
<td>76</td>
<td>6</td>
<td>18</td>
<td>.61</td>
</tr>
<tr>
<td>Swallowing</td>
<td>96</td>
<td>4</td>
<td>0</td>
<td>.96</td>
</tr>
</tbody>
</table>

### 6 | DISCUSSION

In this study, 38% of the patients reported severe oral symptoms, mostly regarding dry lips and not having an adequate amount of saliva. Forty per cent of the patients changed their teeth-brushing habits during their hospital stay, and 80% of the patients were not offered help with oral care. According to RN assessments using ROAG, 74% of the patients had some problems with oral health, and 13% had the most severe problems. Forty-eight per cent of the patients needed assistance with oral care, but according to the patients, only 10% received help. There were differences when comparing RN and patient assessments—most often, RNs assessed the patient’s oral health as worse than the patient did.

Older patients are at risk of worse oral health (Gil-Montoya et al., 2015), and patients entering acute medical care often have poor oral health (Hanne et al., 2012). This accords with our results showing that older patients (the mean age in our cohort was 67 years), in a surgical context, had a decreased level of oral health. Additionally, the common use of oxygen postoperatively, and patients’ intake of multiple drugs, further increase the risk of even worse oral health. Taking into consideration the impact of poor oral health on the risk of postoperative complications, for example pneumonia (Wren et al., 2010), and a decreased nutritional intake (Gil-Montoya et al., 2015), our results emphasise the importance of assessing oral health and, where necessary, supporting patients with oral care. Not fulfilling patients’ fundamental oral healthcare needs compromises patients’ safety and well-being.

The question then is whether oral health should be assessed by the patient or by the RN. The results from this study, and others (Koistinen et al., 2019; Paulsson et al., 2007), show disagreement between patients’ self-reported oral health and RN assessments using ROAG. In this study, the conformity and the interrater agreement were poor (<75%) for lips, oral mucosa and teeth. Where there was a disagreement, the RN assessed the patient’s oral health as being poorer than the patient did (Table 4). To conclude, it seems important that oral health is assessed by an RN; otherwise, oral problems may remain untreated, causing disadvantages in patients’ well-being and recovery after surgery.

At the surgical wards included in our study, there were no written local guidelines regarding oral care, and oral care was not included in the preoperative standard care plan. However, the Swedish national guideline for care describes in general terms good oral care, and that oral care should be performed twice a day. RNs are responsible for patient safety, to avoid decreased oral health, and to counteract complications due to bad oral health, thus maintaining patients’ oral health during admission time (Hanne et al., 2012). Our results show that while 74% of the patients were assessed as having oral health problems, 80% of the patients reported that they did not receive any offers of help with oral care. A previous study has, in accordance with our results, shown that oral care is deprioritised in surgical care (Ball et al., 2016). If nurses do not prioritise oral care due to a lack of knowledge and skills (Noort et al., 2020), because they consider oral health to be ‘common sense’ (Feo et al., 2019), or because the workload is too high (Bagnasco et al., 2020), it is vital to highlight the importance of strong and competent nurse management for fundamental care delivery. To demonstrate the importance of routines for oral health and oral care, nurse managers need to introduce and maintain such routines, including oral health assessment. Fundamental oral care delivery needs to be seen as a minimum standard of care (Kitson et al., 2022) and delivered to ensure patients’ safety and well-being (Kitson et al., 2022).

A limitation of this study was the relatively small sample, and that it was a single-centre study, but the response rate was acceptable (75%). Background characteristics were not included in data collection, thus not knowing if the patients had diseases that could affect oral health. Another limitation is that the ROAG assessments were performed by two RNs and it is possible that the assessment therefore could differ, although they had the same level of education and experiences of clinical practice. However, our results are similar to that of Paulsson et al. (2007), showing disagreements between nurse and patient oral health assessments. These assessment tools can be seen as fundamental care-sensitive indicators, measuring the outcome of care delivery; nonetheless, they need to be further evaluated.

### 7 | CONCLUSIONS

There are deficiencies in fundamental care delivery, regarding oral care. Oral health assessments need to be performed regularly by registered nurses since it is insufficient that patients self-assess their oral health. Routines for systematic oral assessments by registered nurses and routines for oral care need to be implemented by nurse managers to ensure that patients’ fundamental care needs are fulfilled.
AUTHOR CONTRIBUTIONS
KE contributed to conceptualisation, formal analysis, methodology, visualisation, supervision and writing original draft. EJ contributed to conceptualisation, methodology and writing—review and editing. LLI contributed to data curation, formal analysis and investigation. SME contributed to data curation, formal analysis and investigation. AKG contributed to conceptualisation and methodology. CF contributed to conceptualisation, validation and writing—review and editing.

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CONFLICT OF INTEREST STATEMENT
There is no conflict of interest to prejudice the importance of the research reported.

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

ETHICS STATEMENT
All data utilised in the submitted manuscript have been lawfully acquired in accordance with the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity. Relevant fieldwork permission was obtained, and the study was approved by the Swedish Ethical Review Authority (Dnr. 2021-04932). The authors have checked to make sure that our submission conforms as applicable to the Journal’s statistical guidelines.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.