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Original Article

Shared decision-making during surgical thyroid consultation

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ABSTRACT

INTRODUCTION. Shared decision-making (SDM) enables individually tailored treatment plans. This survey explored patients' and surgeons' perceptions of SDM in consultations on thyroid nodules. Furthermore, we aimed to explore possible discrepancies between the groups, identify factors influencing patients' perceived levels of SDM and evaluate decisional regret.

METHODS. A prospective survey study was conducted among patients attending surgical consultations for thyroid nodules. Patients and surgeons completed SDM questionnaires to measure perceived levels of SDM. Six-month decisional regret was assessed by the Decisional Regret Scale.

RESULTS. The median SDM scores were 86.7 (interquartile range (IQR) = 20) and 80.0 (IQR = 28.9) for patients and doctors, respectively, showing a significant mean difference of 7.9 (95% confidence interval: 4.0-11.8; $p < 0.001$) with higher scores for patients than surgeons. A high SDM score was positively associated with preliminary examinations ($p = 0.04$) but not with other consultation types or sociodemographic factors (SDF). A total of 12.2% of patients showed decisional regret. Regret was not correlated with the patient's SDM score (Spearman's rank correlation coefficient = –0.06; $p = 0.6$).

CONCLUSIONS. Patients and surgeons reported high levels of perceived SDM. Perceived levels of SDM and decisional regret were not associated with SDF, except for the consultation type. Factors affecting the perceived SDM level remain largely unknown and could be identified by adding objective SDM measures in future studies.

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Shared decision-making (SDM) is increasingly prioritised in healthcare to ensure tailored treatment plans. SDM engages patients in healthcare decisions and respects their autonomy [1, 2]. SDM involves collaboration between patients and physicians, combining the physician's professional expertise with the patient's preferences to improve satisfaction and reduce anxiety, decisional conflicts and decisional regret (DR) among patients [3, 4].

In otorhinolaryngology (ORL), thyroid nodules (TN) constitute a clinical challenge as active monitoring and surgery are considered appropriate choices for various nodules [5]. Integrating SDM and patient preferences in surgery is essential, as surgery and active monitoring may have irreversible consequences [4]. Despite the advantages of SDM in ORL, the literature remains sparse. Ospina et al. described using SDM with a conversation aid in an American setting [6]. Still, to our knowledge, no Danish study has explored the perceptions of SDM in thyroid consultations or a free healthcare setting.

This study aimed to explore adult patients' and surgeons' experiences with SDM during consultations on TN and to identify any discrepancies between them. The secondary aims were to identify sociodemographic and clinical factors influencing patients' perception of SDM and to explore patient DR.

Methods

Study design

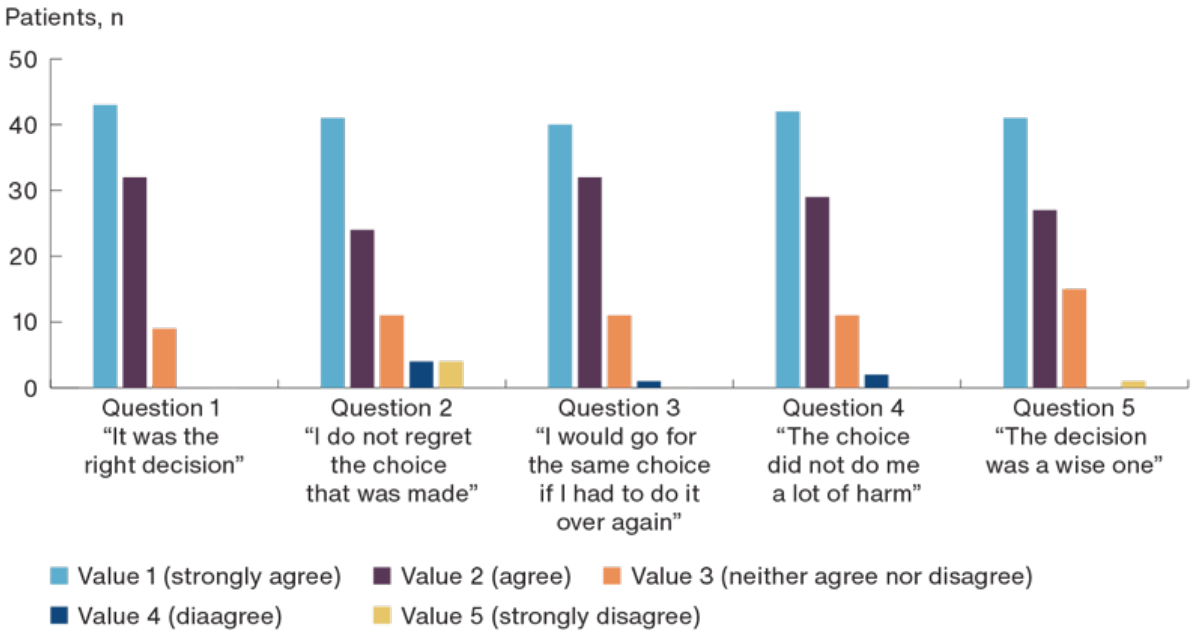
This was a prospective survey study in surgical consultations on TN conducted in a Danish outpatient clinic. Patients were included from 13 September to 31 November 2021. The inclusion criteria were the ability to write and read Danish and being ≥ 18 years old. The exclusion criteria were severe physical or mental illness.

SDM was assessed using the SDM-Q-9 (patients' perception of SDM (SDMpt)) and the SDM-Q-Doc (surgeons' perception of SDM (SDMdoc)) to measure patients' and surgeons' perceived levels of SDM, respectively [7, 8] (Supplementary material (SM), p1-4). The questionnaires comprised nine questions, each rated on a six-point Likert scale from "Completely disagree" (0) to "Completely agree" (5). The sum of all nine questions was converted into a scale with a total ranging from 0 (no perception of SDM) to 100 (complete perception of SDM) [9]. Two additional unvalidated multiple-choice questions were used to introduce the nine items: "State the cause of referral" and "State the treatment plan" for both surgeons and patients (SM, p1-4) [9]. Causes of referral were subsequently divided into three categories: "Suspected cancer", "No suspected cancer" and "Nodule follow-up" because the initial categories were not mutually exclusive (SM, p5). Missing values were replaced with the mean of the remaining answers in the same questionnaire. In case of more than two missing values on either the SDMpt or the SDMdoc, the paired response was excluded (SM, p6). The Danish translation of the SDMdoc has not been published, but it has been forward and backward translated, and another Danish research group has tested its face validity.

Sociodemographic data were reported by patients and surgeons (SM, p1-4). Electronic patient records were used to obtain information, including patient age, sex, prior thyroid surgery, consultation type, thyroid cytology and the Charlson Comorbidity Index [10].

The Decisional Regret Scale (DRS) questionnaire assessed the six-month DR status concerning the treatment/follow-up plan [11, 12]. The DRS comprises five statements, e.g., "I do not regret the choice that was made". Each question is rated on a five-point Likert scale from "Strongly agree" (1) to "Strongly disagree" (5). Reverse wording was used in questions 2 and 4 (Figure 1, SM, p7), and these questions were reverse scored for analysis; therefore, higher scores indicate more regret. The total score ranges from 5 (no regret) to 25 (complete regret). Substantial regret was defined as a score of ≥ 4 on one or more statements (SM, p7).

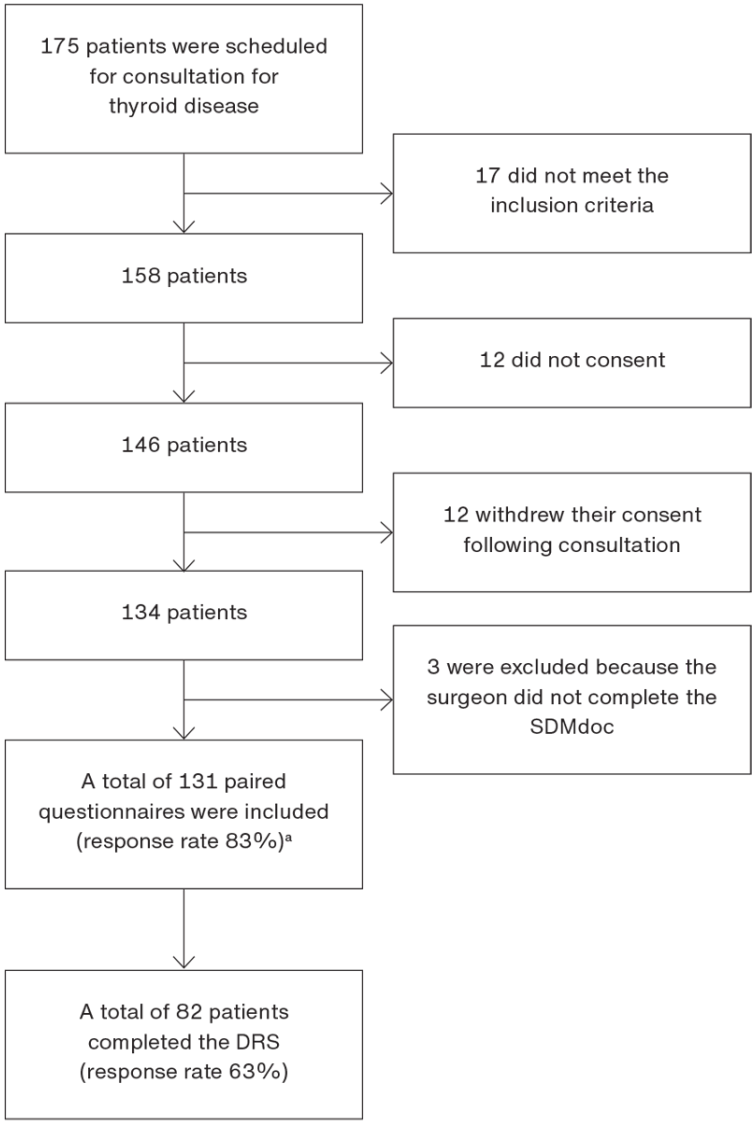
FIGURE 1 Decisional Regret Scale (DRS) results for 82 of 131 patients seen at the Aalborg University Ear-nose-throat Outpatient Clinic with thyroid nodule(s). In the original questionnaire, positive wording is used in questions 1, 3 and 5, whereas reversed wording is used in questions 2 and 4. For data presentation and analysis, questions 2 and 4 have been reverse-coded and the wording has been changed accordingly in the figure. The original statements "I regret the choice that was made" and "The choice did me a lot of harm" were modified to "I do not regret the choice that was made" and "The choice did not do me a lot of harm". Therefore, in the figure, higher scores indicate more regret in all questions. Regret was defined as a score of four or more on one or more questions. Two patients showed regret in two statements (DRS 2 + 5 and DRS 2 + 3), and eight patients only expressed regret in one statement (DRS 2 n = 6 and DRS 4 n = 2). The original questionnaire is found in SM, p7.



Before the consultation, patients were invited to participate. The participants were blinded to the study's aim. It was impossible to blind the surgeons as they were included multiple times. Surgeons had no training in SDM and no access to patient responses, of which patients were informed. The consultation length was recorded from when the surgeon entered the consultation room to the final exit. Immediately after the consultation, patients and surgeons completed the questionnaires.

Patients were contacted by e-mail six months after their inclusion to complete the DRS (**Figure 2**). We recorded whether patients had undergone surgery. Furthermore, the indication and extent of surgery were registered along with complications and histopathology.

FIGURE 2 Flow chart of patients with thyroid nodule(s) approached at the Aalborg University ear-nose-throat outpatient clinic.



DRS = Decisional Regret Scale; SDM = shared decision-making; SDMdoc = surgeons' perception of SDM; SDMpt = patients' perception of SDM.
a) Among the 131 included pairs, 9 patients had 1-2 missing values on the SDMpt and 2 surgeons had 1-2 missing values on the SDMdoc.

Ethics

The study was approved by the Regional Council of the North Denmark Region, ID number 2021-133, in pursuance of Danish law. Participants provided oral and written informed consent.

Data analysis

Data were analysed using StataCorp. 2023. Stata Statistical Software: Release 18. College Station, TX: StataCorp LLC. Descriptive statistics were used to analyse sociodemographic and questionnaire data expressed as absolute frequencies. For quantitative data, median (interquartile range (IQR)) or mean (± standard deviation) were

calculated, depending on their (non-)normal distribution. A descriptive analysis revealed that SDMpt and SDMdoc data were not normally distributed, but due to the sample size, a paired t-test was used to test for differences between SDMpt and SDMdoc scores. An unpaired t-test was used to investigate SDMpt scores for patient subgroups. Spearman's correlation was used to explore correlations between SDMpt, consultation duration, patient age and DRS. One-way analysis of variance (ANOVA) was used to investigate associations between the perceived level of SDMpt, demographics and consultation characteristics. Post hoc analysis with margins was performed. A $p < 0.05$ was considered statistically significant.

Data availability statement

Additional data can be requested from the corresponding author and will be provided in accordance with Danish laws and provisions. Note that according to Danish law, individual-level data may not be stored.

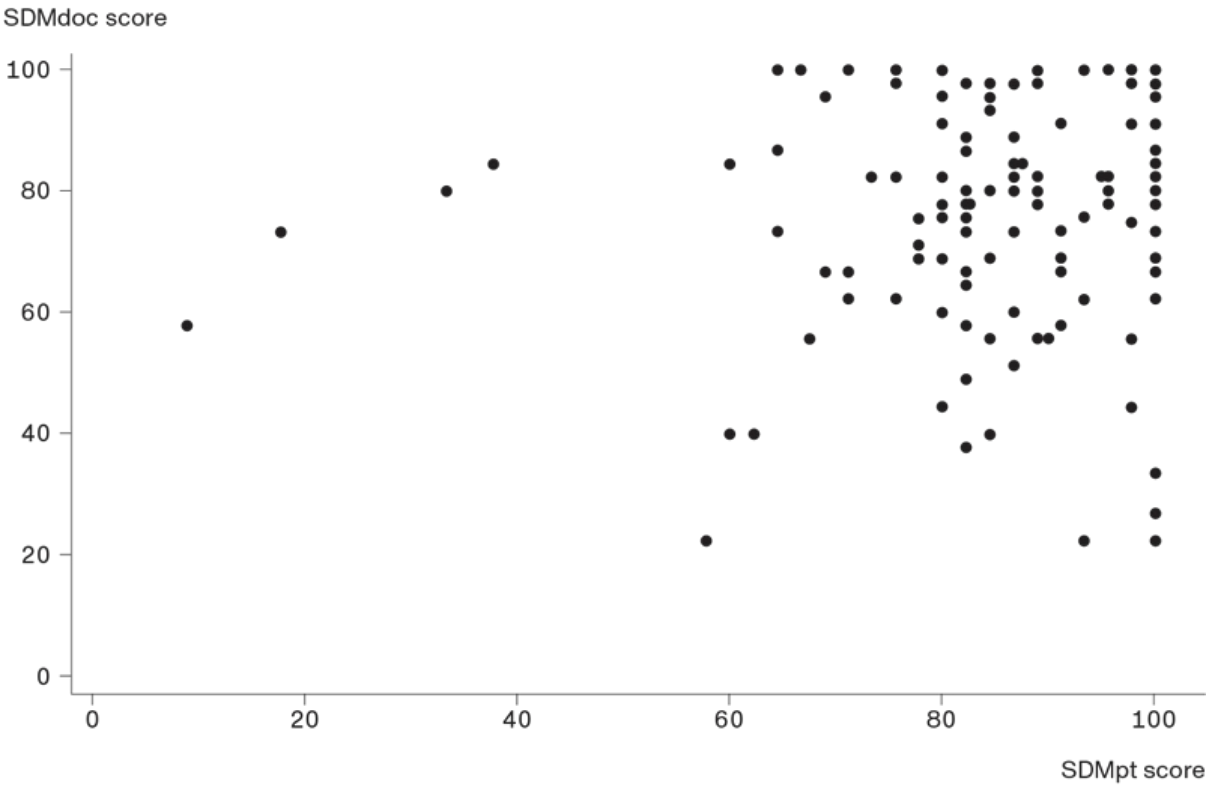
Trial registration: not relevant.

Results

SDM-Q outcomes

The median SDM scores were 86.7 (IQR = 20) and 80.0 (IQR = 28.9) for patients and surgeons, respectively (**Figure 3**). The maximum SDM score was given by 34 (26.0%) patients and 16 (12.2%) surgeons. A significant mean difference was observed between patients' and surgeons' paired SDM scores: 7.9 (95% confidence interval (CI): 4.0-11.8; $p < 0.001$), with higher scores for patients.

FIGURE 3 Scatter plot showing the paired presentation of patients' (pt) and doctors' (doc) perceived level of shared decision-making (SDM) during surgical consultations on thyroid nodule(s). High scores demonstrate a high perceived level of shared decision-making. The plot illustrates a tendency towards associated high SDMdoc and SDMpt scores without any strong linear correlation but with some measure of a ceiling effect. The outliers reveal disagreement between the patients' and surgeons' SDM scores.



Sociodemographic and clinical features

Among the 131 patients, the mean age was 63.0 (± 13.2) years (**Table 1**). Among 16 surgeons, consultations were led by a chief physician in 19, a senior registrar in 52 and a resident in 60 cases. No association was found between SDMpt and the surgeon's seniority. The mean duration of the consultations was 20.7 (± 12.3) minutes (range: 4-78 minutes). Cytology results (receiving the cytopathology results of a fine needle aspiration biopsy) constituted the shortest consultations, with a mean of 11.0 (± 5.6) minutes, followed by follow-ups (13.8 ± 7.7 minutes), scan results (19.4 ± 10.4 minutes) and preliminary examinations (28.3 ± 12.1 minutes).

TABLE 1 Patient and consultation characteristics and associated patient and surgeon shared decision-making scores of 131 patients seen at the Aalborg University Ear-nose-throat Outpatient Clinic with thyroid nodule(s)[a].

		SDM score[b]		
	n (%)	SDMpt (N = 131)	SDMdoc (N = 131)	Difference, mean[c] (95% CI)
All	131 (100)	85.5	77.6	7.9 (4.0-11.8)
Sex				
Male	42 (32.1)	85.7	73.3	12.4 (5.0-19.7)
Female	89 (68.0)	85.4	79.6	5.8 (1.2-10.3)
Educational level				
Primary education	20 (15.3)	86.1	78.6	7.4 (−2.8-17.7)
Vocational education	47 (35.9)	87.0	78.2	8.9 (3.9-13.8)
Diploma level	32 (24.4)	87.0	71.3	15.7 (6.2-25.1)
Higher education	31 (23.7)	81.3	81.9	−0.5 (−8.4-7.4)
Marital status				
Married or cohabiting	104 (79.4)	85.2	79.2	6.0 (1.7-10.4)
Single	27 (20.6)	86.1	71.4	15.1 (6.6-23.5)
Accompanied by a relative?				
No	82 (62.6)	84.2	76.7	7.5 (2.3-12.7)
Yes	49 (37.4)	87.6	79.0	8.6 (2.7-14.4)
Prior thyroid surgery?				
No	117 (89.3)	86.0	77.8	8.2 (4.1-12.2)
Yes	14 (10.7)	81.2	75.7	5.6 (−8.2-19.3)
Charlson Comorbidity Index [10]				
0	80 (61.1)	85.7	79.9	5.8 (1.6-10.1)
> 1	51 (38.9)	84.1	74.0	11.1 (3.7-18.5)
Consultation type				
Preliminary examination	59 (45.0)	87.7	78.7	9.0 (3.8-14.2)
Follow-up	57 (43.5)	83.2	75.7	7.5 (1.0-14.0)
Cytology result	5 (3.8)	71.6	76.0	−4.4 (−30.3-21.4)
Scan result	10 (7.6)	92.0	82.2	9.8 (−2.6-22.2)
Cytology				
None[d]	59 (45.0)	85.3	77.1	8.2 (2.1-14.3)
Indeterminate	16 (12.2)	84.9	79.2	5.7 (−4.3-15.7)
Benign	47 (35.9)	84.0	77.4	6.5 (−0.3-13.4)
Suspected follicular neoplasia	5 (3.8)	92.4	79.1	13.3 (5.7-21.0)
Follicular neoplasia	< 3	98.5	77.8	-
Thyroid cancer/metastases	< 3	100	77.8	-

CI = confidence interval; SDM = shared decision-making; SDMdoc = surgeons' perception of SDM; SDMpt = patients' perception of SDM.
a) Variable cell counts are due to missing values.
b) SDM questionnaires range from 0 to 100, with high scores indicating a high level of shared decision-making.
c) The mean difference represents the mean difference of paired differences.
d) No new cytology report was available for consultation.

In 58.8% of cases, patients and surgeons stated the same cause of referral; for decisions concerning treatment; this applied to 81.7% of cases. In three cases, the patient and surgeon disagreed on whether surgery was planned (SM, p8). According to patients, 80 (61.1%) were presented with multiple treatment options; according to surgeons, this figure was 73 (55.7%). Comparing patients given one or multiple treatment options, SDMpt scores were similar (95% CI: −1.9-9.2; p = 0.19), but a significant difference was found in the associated SDMdoc score (95% CI: 1.1-14.3; p = 0.02). ANOVA showed a significant association between SDMpt and "Consultation type." Post hoc analysis revealed a significant difference between the consultation types of "Preliminary examination" and "Cytology result" (p = 0.04), with higher scores for "Preliminary examination." No other associations were found between the SDMpt score and sociodemographic and consultation characteristics (Table 1, SM, p9).

Decisional regret

The average total DRS score was 8.6 (range: 5-16). Substantial regret was registered in ten of 82 respondents (12.2%) (Figure 1). One of the 25 patients who had undergone surgery before completing the DRS expressed substantial regret. This patient had nearly complete symptom regression after surgery and intact vocal cord mobility. Among the remaining nine patients expressing regret, three were terminated from the department with no indication for treatment or follow-up, two requested that their planned surgery be postponed due to comorbidity, and four were scheduled for follow-up. At follow-up one expressed relapse of symptoms at the first consultation following the DRS questionnaire and was subsequently scheduled for surgery. No significant correlation between SDMpt and DRS was found (Spearman's rank correlation coefficient (rs) = 0.06; p = 0.6). Patients with substantial regret did not significantly differ from those without regret regarding SDM scores and sociodemographic and consultation characteristics.

Discussion

This study examined perceived SDM among surgeons and patients in the surgical evaluation of TN. High levels of perceived SDM were observed during surgical consultations. Patients' SDM scores were systematically higher than surgeons' scores. The high SDM scores align with previous studies in other surgical fields [13-15]. SDM ensures patient involvement and is particularly beneficial when multiple treatment options exist [3, 5]. In 40% of consultations, patients and surgeons reported that only one treatment option was discussed. Therefore, SDM would not formally be measurable. Studies have shown that patients consider themselves well-informed and involved in treatment decisions despite having limited awareness of their treatment options [16]. A high SDMpt might indicate satisfaction with the consultation rather than the perception of SDM [14, 17]. This would explain the similar SDMpt scores in consultations with one and multiple options. For surgeons, SDMdoc scores were significantly lower in one-option consultations, suggesting that surgeons were more focused on evaluating the SDM process. The difference in responses to one-option consultations probably contributes to the overall observed difference in SDM scores. The real number of one-option consultations is unknown as no objective option registration was performed. One-option consultations may have covered a discussion of less attractive treatment alternatives that were considered irrelevant and therefore not reported.

Significantly higher SDMpt scores were observed in "Preliminary examination" than in "Cytology result" consultations. It is likely that the lower SDM score in "Cytology result" consultations may be ascribed to a previous plan linked to the cytology result, limiting the discussion of further options. In our study, 60% of patients and surgeons agreed on the cause of referral, whereas 80% agreed on the treatment plan. The discrepancy between patients and surgeons has unknown consequences on SDM. Still, in a study by Ikeda et al., the importance of considering patient expectations before the consultation to avoid patient-physician disconnect was emphasised [3].

No significant relation between SDMpt and sociodemographic data was found, possibly due to the free-of-charge Danish healthcare system. The patient's focus on and involvement in SDM may differ depending on the degree of self-payment. Also, in a free-of-charge healthcare system, the surgeons' income is independent of the treatment decisions and any malpractice claims. However, our findings align with those of previous studies, including an American study with 233 surgical patients in ORL, where no significant relationship was found between SDMpt and sociodemographic data [18, 19]. Hence, the present data do not underpin a theory of difference in SDM perception between differently financed healthcare systems.

Former studies found that high SDM scores were linked to decreased DR [20]. This study found no significant association between SDM and DRS scores. The different stages of patient pathways might challenge the

interpretation of the association between SDM and DRS at the time of inclusion. Furthermore, the overall high SDMpt scores and the potential selection bias caused by a DRS response rate of 63% must be considered. Only 12% expressed substantial regret, indicating a high level of patient satisfaction with the treatment decision. Furthermore, most patients with regret expressed this in one statement out of five. Due to the reverse coding on DRS 2 and 4, patients might have misinterpreted these items. Also, the DRS does not provide the cause of regret, and it was not obvious to the authors from the available data what caused ten patients to express substantial regret. Patient interviews in these cases may potentially reveal changeable reasons for regret and are therefore warranted.

Strengths and limitations

All patients with TN were approached to prevent selection bias. To avoid imprecise ratings, questionnaires were completed immediately after the consultation. Questionnaires have limitations, especially in terms of interpretation and response bias. However, the questionnaires are validated and evaluate SDM from both the patients' and surgeons' perspectives. Alternative measurements based on third-party observation and rating of the consultation might have provided more details and objectivity, but the awareness of observation might also potentially influence the participants.

Conclusions

Patients and doctors reported high levels of perceived SDM, though patients scored significantly higher than surgeons. Patients' perceived levels of SDM and DR were not associated with consultation or sociodemographic variables, except for consultation type. Factors affecting the perceived SDM level remain largely unknown. SDM is challenging to measure, as even validated questionnaires lack objective measures. Adding objective measures may potentially help identify influencing variables and describe the missing association between patients' perceived level of SDM and DR, which was a surprising finding of this study.

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