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Abstract

The UK National Institute for Health and Care Excellence (NICE) guidelines recommend that patients and professionals make shared decisions between surgery and stereotactic ablative radiotherapy (SABR) when treating early stage non small cell lung cancer (NSCLC). Variation by centre suggests treatment decisions may be disproportionately influenced by clinician judgment and treatment availability rather than patient preference. This systematic review critically evaluates studies of patient and clinician preferences for treatment of early stage NSCLC. Primary empirical research up to 30 April 2020 was identified from searches of MEDLINE, EMBASE, PsycInfo and Web of Science databases. Data extracted included: study characteristics and methods, preferences for NSCLC treatment and involvement in decision making and risk of bias using the Mixed Methods Appraisal Tool. Findings were synthesized using descriptive data and narrative synthesis. 23 studies were included in the review; 18 measured patient preferences, 4 clinician preferences and 1 both clinician and patient preferences. Patients and clinicians were both most likely to prefer a collaborative role in treatment decisions. Most patients did not recall there being a choice between surgery or SABR options, and thus experienced minimal decisional conflict. For professionals to support patients in making informed, value based decisions about NSCLC treatments, better quality evidence is needed of the clinical and quality of life trade offs for both surgery and SABR.

Keywords: shared decision making, lung cancer, radiotherapy, surgery

Abbreviations

NSCLC: Non small cell lung cancer

NICE: National Institute for Health and Care Excellence

SABR: Stereotactic ablative radiotherapy

SDM: Shared decision making

CPS: Control Preferences Scale

DCS: Decisional Conflict Scale

OR: Odds ratio

CI: Confidence Interval

1.0 Introduction

For early stage non-small cell lung cancer (NSCLC), guidelines recommend surgery when the patient is fit, or stereotactic ablative radiotherapy (SABR) when surgery is considered unsuitable. [1] However, advances in SABR technology, the differential impact of surgery and SABR on subsequent respiratory function and quality of life and patient reported outcome data suggests that professionals need to continuously engage patients in shared decision making between treatment options. [2]

High quality evidence comparing the effectiveness of surgery and SABR treatments across clinical and patient reported outcomes is not available. [3, 4] Patient and clinician prior preferences between surgical and SABR treatments and the need for involvement in decisions have been challenges for NSCLC clinical trials. [5, 6] When clinical outcomes after surgery or SABR are not easily comparable, it is vital to involve patients in decision-making, discussing the reasons for pre-existing patient, and clinician, preferences, can support the shared decision making process, and may improve satisfaction.[7] This systematic review critically evaluates studies of patient and clinician preferences for treatment of early stage NSCLC to explore:

1) patient preferences in decision-making roles for the treatment of early-stage NSCLC

2) patient, and clinician, preferences between surgery and SABR

3) factors affecting patient preferences between surgery and SABR

2.0 Material and Methods

This systematic review was performed in accordance with Preferred Reporting Items for Systematic Reviews and Meta Analyses guidelines.[8]

The search strategy developed to search MEDLINE, EMBASE, PsycInfo and Web of Science databases for relevant studies was guided by a senior information specialist. Index terms, synonyms, Boolean operators, truncation and wildcards were used to ensure that the search was highly sensitive. Our search included studies up to 30th April 2020 (see Appendix A). Two reviewers (SD, CP) independently screened the titles, abstracts (first phase) and assessed the full texts of remaining studies with regards to their relevance and checked them against the inclusion and exclusion criteria (second phase). Disagreements between reviewers over the inclusion of studies were discussed and resolved by consensus, reached by re reviewing the respective papers and discussing them with a third reviewer.

2.1 Selection Criteria

All studies meeting the selection criteria were included this review.

Inclusion criteria were:

1. Primary research assessing attitudes towards surgery for early-stage NSCLC
2. Primary research assessing attitudes towards SABR for early-stage NSCLC
4. Primary research assessing decision-making preferences for lung cancer treatment

Exclusion criteria were:

1. Review Articles
2. Studies that did not focus on lung cancer (<30% lung cancer patients)
3. Studies published in languages other than English

2.2 Data Extraction and Quality Assessment

A standardized data extraction template was developed to extract the following characteristics from each study:

- Article demographics: first author name, year of publication, country
- Sample characteristics: patients or clinicians, hypothetical versus actual decisions, NSCLC stage.
- Design & Methods: study design, whether studies were conducted before or after treatment decisions were made, relevant measured outcomes
- Findings and limitations

The Mixed Methods Appraisal Tool (MMAT) [9], a tool designed to assess risk of bias in mixed studies systematic reviews, was chosen to appraise the included studies as these included mixed methods, qualitative and quantitative studies.

The included studies were categorized as qualitative, quantitative descriptive or mixed methods studies, and the appropriate methodological quality criteria for each study type was used for appraisal accordingly. Two reviewers assessed the studies independently and disagreements over answers to MMAT questions were resolved by discussion, re reviewing the relevant studies and consulting a third reviewer. No studies were excluded based on this assessment in line with recommendations by Hong et al,[9] but results should be interpreted in context of the limitations of studies.

2.3 Narrative Synthesis

As the scope and focus of the included studies varied greatly, a narrative synthesis was considered appropriate to group results thematically for comparison and analysis. Following the guidance by Popay et al,[10] the narrative synthesis process involved developing a preliminary synthesis, investigating similarities and differences in findings and reflecting on the synthesis to determine the robustness of conclusions.

3.0 Results

1233 articles were identified through database searches and 5 additional articles were identified from the references section of the review by Schmidt et al.[11] After removing duplicates 1102 unique publications remained. Following title and abstract screening 33 full text articles remained, of which 23 were included in the review (see Figure 1). The results tables are shown in Appendix B.

3.1 Study Characteristics

There were 23 studies identified; 18 measured patient preferences in decision making for lung cancer treatments, 4 measured clinician opinions and 1 measured both patient and clinician opinions; 2 of the 23 studies considered hypothetical scenarios.

Of the studies focusing on patients, 6 used qualitative interviews, 11 used quantitative surveys, and 1 was a mixed methods study using both interviews and surveys. Of the studies considering clinician opinions, 1 used interview and 3 used surveys. One study used both patient and clinicians within focus groups.

15 studies were conducted in the USA, 4 were conducted in the Netherlands, and 1 each was conducted in the UK, Japan, Canada and Australia.

3.2 Quality Assessment

The MMAT[9] was used to assess risk of bias in the included studies.

The MMAT table displaying the assessment of the included studies is shown below.

Table 1

	Screening		**Qualitative**					**Quantitative Descriptive**					**Mixed-Methods**				
	S1	**S2**	**1.1**	**1.2**	**1.3**	**1.4**	**1.5**	**4.1**	**4.2**	**4.3**	**4.4**	**4.5**	**5.1**	**5.2**	**5.3**	**5.4**	**5.5**
Mokhles, 2018	Yes	Yes						Yes	No	Yes	Yes	Yes					
Moth, 2016	Yes	Yes						Yes	No	Yes	Yes	Yes					
Gaspar, 2018	Yes	Yes						Yes	No	Yes	Yes	Yes					
Davidson, 1999	Yes	Yes						Yes	No	Yes	No	Yes					
Golden, 2017	Yes	No	Yes	Yes	Yes	Yes	Yes										
Keating, 2010	Yes	Yes						Yes	No	Yes	No	Yes					
Kehl, 2015	Yes	Yes						Yes	No	Yes	Yes	Yes					
Lee, 2016	Yes	Yes	Yes	Yes	Yes	Yes	Yes										
Nugent, 2017	Yes	Yes						Yes	No	Yes	Yes	Yes					
Hopmans, 2015	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes

Dalton, 2013	Yes	Yes						Yes	No	Yes	Yes	Yes					
Powell, 2015	Yes	Yes	Yes	Yes	Yes	Yes	Yes										
Tong, 2016	Yes	Yes						Yes	No	Yes	Yes	Yes					
Takeda, 2019	Yes	Yes						Yes	No	Yes	Yes	Yes					
Shaverdian, 2015	Yes	Yes						Yes	No	Yes	Yes	Yes					
Schwartz, 2018	Yes	Yes	Yes	Yes	Yes	Yes	Yes										
Sullivan, 2019	Yes	Yes						Yes	Yes	Yes	Yes	Yes					
Cykert, 2010	Yes	Yes						Yes	No	Yes	Yes	Yes					
Mehta, 2012	Yes	Yes						Yes	Yes	Yes	Yes	Yes					
Golden, 2017	Yes	Yes	No	Yes	Yes	Yes	Yes										
Iaccarino, 2017	Yes	Yes						Yes	No	Yes	No	Yes					
Mokhles, 2017	Yes	Yes						Yes	Yes	Yes	Yes	Yes					

Hopmans, 2016	Yes	Yes						Yes	No	Yes	Yes	Yes					

3.3 Patient Preferences in Decision Making for Early Stage NSCLC

18 studies explored the patient preferences in SDM using different methodology and scales. This resulted in different aspects being reported by the authors.

Patient preferences in SDM

Five studies used the Control Preferences Scale (CPS)[13] to explore patient preferences between active, collaborative and passive roles in decision making, of which 4 found that collaborative roles were the most popular.

Table 2

Study	**Country**	**Sample size**	**Respondents**	**Actual or Hypothetical Decision**	**Decision**	**Proportion who preferred active role**	**Proportion who preferred collaborative role**	**Proportion who preferred passive role**
Mokhles et al[14], 2018	Netherlands	84	early stage NSCLC patients	Actual	Surgery vs SBRT for early-stage NSCLC	2%	85%	12%
Moth et al[15], 2016 (baseline)	Australia	98	patients who chose adjuvant chemotherapy after surgery for NSCLC	Actual	adjuvant chemotherapy after surgery for NSCLC	27%	47%	27%
Moth et al[15], 2016 (6 month follow up)	Australia	75	patients who chose adjuvant chemotherapy	Actual	adjuvant chemotherapy after surgery for NSCLC	11%	53%	28%

			after surgery for NSCLC					
Gaspar et al[16], 2018	USA	127 lung cancer patients and 71 caregivers / support persons	lung cancer patients (29% with early stage lung cancer), their caregivers and significant others	Actual	Various difficult treatment decisions	NR	73%	NR
Davidson et al[17], 1999	Canada	21	Lung cancer patients and colorectal cancer patients	Hypothetical	Treatment for stage 3b NSCLC	57% preferred active or collaborative roles	57% preferred active or collaborative roles	43%

In the Mokhles et al study of 84 early-stage NSCLC patients deciding between surgery and SABR, 81% considered shared decision making to be important. [14]

In the Moth et al's study of 98 NSCLC patients considering adjuvant chemotherapy after surgery, preferred decision making role changed for 47% of patients between baseline and 6 months from XXX to XXX. The association between university-level of education and preferring an active role at baseline (Odds Ratio (OR)=2.9, P=0.02) was not extinguished after consultation about lung cancer and treatment plans.[15]

In Golden et al's interview study (n=11), the majority of early stage NSCLC patients indicated a preference for shared decision making (SDM). [18]

Actual decision-making roles

Of the 5 studies that examined preferred decision-making role using the Control Preferences Scale, 2 examined patients' actual decision-making roles and found no association l[19] .

Table 3

Study	**Country**	**Sample size**	**Respondents**	**Actual or Hypothetical Decision**	**Decision**	**Proportion who had an active role**	**Proportion who had a collaborative role**	**Proportion who had a passive role**
Gaspar et al[16], 2018	USA	98	lung cancer patients (29% with early stage lung cancer), their caregivers and significant others	Actual	Difficult decisions in treatment	NR	58%	NR
Davidson et al[17], 1999	Canada	21	Lung cancer patients (81% with NSCLC)	Actual	Various treatment decisions	43% had active or collaborative roles	43% had active or collaborative roles	NR
Keating et al[19], 2010	USA	5383	Lung cancer patients and colorectal cancer patients (44% with lung cancer)	Actual	Various treatment decisions	39%	44%	18%

In Gaspar et al's survey of lung cancer patients, their caregivers and significant others (n=198), found that 50% wished their family members were involved in decision making.[16]

In Davidson et al's interviews with 21 patients (81% with NSCLC) who underwent lung cancer treatment, 29% reported that their actual decision making role differed from their desired role.[17]

In Keating et al's survey of 5383 lung and colorectal cancer patients, patients reporting being healthier before diagnosis were more likely to have active roles and less likely to have passive roles (P=0.03). Interestingly, patients reported having a collaborative role when there was strong evidence supporting one treatment over another, and a passive role when there was no evidence or evidence against the treatment (P<0.001).[19]

Factors associated with SDM and patient preferences/roles

Two studies, by Kehl et al and Lee et al, found associations between decision making roles and other factors surrounding treatment.

Kehl et al in a survey of lung and colorectal cancer patients (n=5315, 37% with NSCLC), found those reporting a passive decision making role were less likely to report excellent care (OR=0.64, 95% Confidence Interval (CI)[0.54, 0.75], P<0.001) than those reporting a collaborative role. Patients stating they preferred a passive role (OR=0.67, 95% CI[0.51, 0.87], P=0.002), and reported having a passive role (OR=0.55, 95% CI[0.45, 0.66], P<0.001), were less likely to experience excellent clinician patient communication than those reporting collaborative roles.[20]

Lee et al interviewed 13 patient caregiver dyads where the patient was African American and had received treatment for lung cancer at a safety net hospital. Patients who took a passive role in decisions had a poorer understanding of the disease and trusted the expertise of their clinicians more than those with active roles.[21]

The aforementioned study by Mokhles et al[14] and a study by Nugent et al[22] assessed the decision making process using the Decisional Conflict Scale (DCS)[23], to explore whether patients were making informed, value based decisions.

Mokhles et al found that of patients who had surgery, 40% indicated decisional conflict (DCS>25) and 21% indicated uncertainty surrounding the treatment decision (DCS>37.5);

for those receiving SABR 48% experienced decisional conflict and 7% indicated uncertainty surrounding the treatment decision. [14]

Nugent et al interviewed patients with stage 1 NSCLC (n=165) finding patients tended not to report decisional conflict about the treatment choice (Mean=15.6, Standard Deviation=13.0). More patient centred communication was associated with greater decisional self efficacy (P=0.03) and decreased decisional conflict (P<0.001). However, all patients interviewed were male, which may limit the generalizability of these conclusions. [22]

Hopmans et al explored the factors considered important by 76 stage 1 NSCLC patients in decision making. Guidance by clinicians was considered the most important aspect, followed by clinician conduct, preparation of the patient for decision making, and having an active role in the decision process. However, 74% of patients in this sample had received SABR and only 22% had received surgery, so the results of their survey may not be generalisable to all patients deciding between SABR and surgery.[24]

Patients who trusted their clinician more were less likely to report poor clinician patient communication (OR=0.564, 95%CI[0.498, 0.639]) and more likely to feel that they had sufficient opportunity to express their concerns (OR=1.639, 95%CI[1.439, 1.867]) in a survey of 386 early stage NSCLC patients by Dalton et al.[25]

3.4 Patient Preferences Between SABR and Surgery

Three studies explored whether patients were routinely offered a choice between SABR and surgery for treatment of early-stage NSCLC, finding heterogenous results. Hopmans et al found that only 29% of early stage NSCLC patients (n=76) recalled being offered both surgery and SABR.[24] Mokhles et al found 18% of patients who underwent surgery felt that they did not have a choice between treatment options, but only 7% of patients who received SABR perceived there to be no choice. Forty percent of patients who underwent surgery felt uninformed, compared to 29% of patients who received SABR. [14] Powell et al's interview study with early stage NSCLC patients (n=15) planning to have surgery found most were not offered another treatment choice. [26]

Two studies asked patients to compare surgery and SABR in hypothetical scenarios. Tong et al recruited 225 members of the public aged >40 years with a smoking history to imagine a hypothetical scenario where they were diagnosed with early stage NSCLC, and offered a choice between minimally invasive surgery, open surgery or SABR. When provided with treatment descriptions including complications and risks, 72% preferred the minimally invasive surgery to both SABR and open surgery with 23% of patients preferring SABR and only 5% preferring open surgery.[27] Takeda et al recruited 52 patients with early stage NSCLC who had been treated with surgery and then SABR and asked them to imagine a hypothetical scenario where they were 70 years old, newly diagnosed with early stage NSCLC and were deciding between surgery and SABR for the first time. Provided with the scenario where both treatments had equal outcomes, patients were more likely to choose SABR ($P<0.01$); even with 5% and 10% better outcomes for surgery, patients were more likely to prefer SABR ($P<0.01$), and at 20% better outcomes for surgery, there was no statistically significant preference. When patients were asked to imagine being 80 years old, rather than 70, they continued to prefer SABR as a treatment option, even with 20% better outcomes for surgery ($P<0.01$).[28]

This study, and another study by Shaverdian et al[29], also explored the preferences between SABR and surgery of patients who had undergone surgery and then SABR for the treatment of early-stage NSCLC. Both studies indicated a preference for SABR, but the effects of recency bias, where recent events are viewed more favourably than older events, must be taken into consideration when interpreting these results. Furthermore, patients receiving SABR after surgery will have had recurrence of the cancer following surgery, which may have led to a more negative view of surgery than may be expected from patients deciding between SABR and surgery for the first time.

In the Takeda et al study, patients had a more positive view towards the consequences of SABR compared with surgery ($P<0.01$) for their general wellbeing (81%), physical wellbeing (71%), physical distress (87%), side effects (65%), stress and anxiety (65%), daily life (62%) and convenience (92%).[28]

In the Shaverdian et al study, a survey of 42 patients, 100% found SABR to be less stressful, less anxiety inducing, less caregiver strain inducing and easier to recover from than surgery. 97% considered SABR to be more convenient, and 80% were more satisfied with their experience of SABR than of surgery. [29]

Powell et al interviewed 15 patients (80% early stage lung cancer) who underwent surgery and explored their reasoning. Patients were willing to accept a high mortality risk in surgery, as they saw no other treatment option, and were willing to trade off living with major disability as a result of surgery if it meant that they would live longer.[26] However, interviews conducted by Schwartz et al (n=7) indicated early stage lung cancer patients were not prepared for the pain, discomfort and low stamina levels that followed surgery.[30]

Sullivan et al survey of patients with NSCLC (n=114) using closed questions reported independence post treatment to be the most important factor in their decision making, followed by life extension and minimising cancer recurrence. Costs of treatment were considered the least important factor, followed by the frequency of hospital visits and emotional side effects.[31]

Cykert et al survey (n=436) found patients with early stage lung cancer who considered clinician patient communication to be poor were more likely to decide against surgery. (OR=0.42, 95%CI[0.32, 0.74]).[32]

Mehta et al analysis of 62 514 early stage NSCLC patients found African American patients (P<0.001) and American patients of other ethnicities (P<0.001) were more likely to refuse surgery than Caucasian American patients.[33]

3.5 Clinician Preferences in Decision Making for Early Stage NSCLC

Three studies explored clinicians' preferences for patient involvement in NSCLC treatment decisions.

Golden et al interview study (n=20) found lung cancer clinicians felt they practiced SDM as they provided patients with information about treatment options and allowed patients to make the final decision. However, most clinicians reported not directly enquiring about patient values, a key component of making shared treatment decisions. [34]

An American Thoracic Society survey (n=425) reported 50% of clinicians favouring a shared decision making role, 35% supporting a patient led role, and 15% supporting a clinician led role. Clinicians who preferred a SDM role tended to be more experienced clinicians than those who did not routinely practice SDM (P=0.01).[35]

Mokhles et al survey (n=111) found 26% of surgeons, 20% of pulmonologists and 44% of radiation oncologists always practiced SDM, and 52% of surgeons, 57% of pulmonologists and 53% of radiation oncologists thought that SDM should always be used for lung cancer patients.[36] Similarly, Hopmans et al surveyed 126 lung cancer clinicians and found that 54% preferred SDM for decisions to treat stage 1 NSCLC.[37] However, Mokhles et al found 30%

of surgeons, 27% of pulmonologists and 44% of radiation oncologists believed that clinicians did not receive sufficient training to deliver effective SDM.[36]

4.0 Discussion

This systematic review synthesized evidence from studies investigating patient and clinician preferences during the decision-making process for treatment of early stage NSCLC. Two different types of preferences are explored in this context, those around involvement in treatment decision making, and those for surgery and SABR treatment options. Both patients and clinicians perceive shared decision making as key to making NSCLC treatment choices, although there was variation in clinician delivery, and patient experience, of shared decision making. The findings illustrate patients made treatment choices based on trade-offs between disability and quality of life consequences, and form preferences about SABR and surgery options when provided with balanced and accessible details.

However, patients were not always aware of all options, their values were not always sought, and they were not always involved in making the decision, in contradiction of guidelines published by NICE[37] and the European Society for Medical Oncology[38]. However, the evidence reported thus far has not investigated how the discussion may have been influenced by any guidelines, how much the clinicians have followed the guidelines during their consent process.

A consistent recommendation from these studies is for NSCLC services to integrate patient involvement interventions within care pathways and enable treatment discussions to take into account quality of life and patient reported outcomes alongside clinical effectiveness data. This is in line with a recent study in which most of the 4020 cancer patients surveyed indicated a desire for involvement in treatment decisions.[40]

The review findings illustrate that clinicians recognize patients wish to participate in NSCLC treatment decision making proactively, and aim to tailor treatment choices to their patient needs. However, a significant challenge for services is enabling clinicians to discuss treatment recommendations within a shared decision making context, taking into account patient preferences. Treatment recommendations are usually made following a multidisciplinary team discussion about patient test results, fitness, comorbidity, and treatment effectiveness. However, NSCLC treatment recommendations are likely to be influenced by: variations in treatment preferences, oncologists have a strong preference for SABR, and surgeons have a strong preference for resection[41]; judgments about fitness for surgery, there are no objective methods for ‘unfit’ for lung cancer patients; weak evidence comparing SABR and surgical effectiveness in patients in early stage NSCLC. Widespread screening campaigns have led to the identification of a greater number of early stage lung cancers and patients with varied demographic characteristics and comorbidities for whom there is no single, clinically best treatment, i.e. clinical equipoise between SABR and surgery.

It is unclear how best to support patients to make informed, value based treatment decisions for early stage NSCLC, and/or elicit informed and stable, patient preferences for treatment. Solely discussing clinical outcomes like mortality and morbidity in pre treatment consultations may prove challenging for patients as raw percentages may not be easily understood. In the studies included in this review, patients clearly define which outcomes are important to them and these should be considered in pre treatment discussions.

The survey by Sullivan et al indicates that independence and life extension are key factors contributing to patient decisions between surgery and SABR, with costs and frequency of hospital visits being less important. However, the survey’s results also imply that for some patients, costs and the frequency of hospital visits carried greater importance. It is difficult to determine what factors an individual patient considers to be important as this may be affected by several personal characteristics, cultural factors and the available healthcare system. However, through the assessment of health utility scores, Cykert et al has indicated that surgical lung cancer patients express more concern about experiencing outcomes of limited physical function, home oxygen need and permanent disability rather than about perioperative mortality risk.[42] Quality of life and patient reported outcomes in this field and identification of the effect of treatments on them would be invaluable for counselling patients who face difficult treatment decisions.

Possible effects of cultural differences on patient preferences in SDM have been suggested [44, 45] but not formally investigated. The studies included in the review are from 6 countries: USA, UK, Netherlands, Japan, Australia and Canada, and most excluded individuals who could not communicate in the country’s native language. Recommendations made on the basis of these studies may be less relevant in countries with considerable cultural differences.

4.1 Limitations

7 of the included studies were published in journals primarily aimed at oncologists, 2 in journals aimed at pulmonologists and 2 in journals aimed at surgeons. 15 of the 23 studies did not include any surgeons as authors, 14 did not include pulmonologists and 7 did not include any oncologists as authors. Given that oncologists are more likely to consider SABR to be equal to surgery and more likely to recommend SABR,[41] the overrepresentation of studies published by oncologists and in oncology journals may have biased the review towards indicating a more positive view of SABR amongst patients and clinicians than is accurate. Future studies in this area should include a multidisciplinary research team to mirror the clinical reality.

The retrospective nature of many studies in the review may have introduced recall bias, and the exclusion of articles not written in English may have further biased findings. It is important to interpret all findings within the context of their limitations.

The different methodologies used to assess patient and clinician preferences may have limited the generalizability of the results of these studies. In some of the studies, early stage lung cancers were only a small percentage of the population. Although some data were reported separately, allowing us to include the study within the review, these data were not always very detailed.

No information was reported about the treatment availability and the cancer pathways that patients followed after diagnosis in each study. This may have influenced the decision making process and deserves future investigation.

4.2 Conclusions

By appraising and synthesizing the existing literature on SDM in early stage NSCLC and related treatments, this review clarifies patient preferences and values in decision making for the treatment of early stage NSCLC to allow clinicians to facilitate more effective SDM.

It identifies areas for improvement in decision making for the treatment for early stage NSCLC and offers suggestions for how this can be achieved. Enquiring about patient values, ensuring that patients are sufficiently informed about treatment options and ensuring that communication is patient centred may improve decision making in the treatment of early stage NSCLC.

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Table Legend

Commented [FB1]: Aha there it is! I think this should be presented together, either move the tables here or move the legends up.

Table 1 MMAT: S1 Are there clear research questions? **S2** Do the collected data allow to address the research questions? **1.1** Is the qualitative approach appropriate to answer the research question? **1.2** Are the qualitative data collection methods adequate to address the research question? **1.3** Are the findings adequately derived from the data? **1.4** Is the interpretation of results sufficiently substantiated by data? **1.5** Is there coherence between qualitative data sources, collection, analysis and interpretation? **4.1** Is the sampling strategy relevant to address the research question? **4.2** Is the sample representative of the target population? **4.3** Are the measurements appropriate? **4.4** Is the risk of nonresponse bias low? **4.5** Is the statistical analysis appropriate to answer the research question? **5.1** Is there an adequate rationale for using a mixed methods design to address the research question? **5.2** Are the different components of the study effectively integrated to answer the research question? **5.3** Are the outputs of the integration of qualitative and quantitative components adequately interpreted? **5.4** Are divergences and inconsistencies between quantitative and qualitative results adequately addressed? **5.5** Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?

Table 2 Preferred Decision Making Role of Respondents (using Control Preferences Scale)

Table 3 Actual Decision Making Role of Respondents (using Control Preferences Scale)

Figure Legend

Figure 1 PRISMA[11] flowchart showing selection of studies

Appendices Legend

Appendix A – Search Strategy

Appendix B – Data Extraction Table

Appendix C – Journal and Author Speciality