Exploration of Functionally Relevant Predictors and Outcomes in Oral Cavity Cancer: A Scoping Review Using the International Classification of Functioning, Disability and Health

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Introduction

- Individuals undergoing treatment for oral cavity cancer (OCC) are likely to experience significant declines in functioning and quality of life (QOL).[1]
- However, the current literature is limited due to the heterogeneity of evaluated outcomes,[2] inconsistent reporting,[3] a scarcity of long-term data,[4] the absence of data on associations and predictors of functioning, and inadequate consideration of the comprehensive impact of OCC and its treatment.[5]
- The current review was performed to synthesize existing literature on the assessment of functional outcomes and factors associated with functioning in patients undergoing treatment for OCCs of the oral tongue and floor of mouth (FOM) using the International Classification of Functioning, Disability and Health (ICF) as a guiding framework.[6]

Review questions

1. How are functional outcomes assessed in patients with OCC of the oral tongue and FOM?
2. Which variables are being collected at baseline and post-treatment and explored in association with functional outcomes?
3. What components of the ICF framework are represented by current outcome measures?
4. Based on the primary research question, what knowledge gaps and/or directions for future research are reported within the sources of evidence?

Methods

Guiding Framework
Arksey and O'Malley (2005) and the Joanna Briggs Institute (2020)

Information Sources
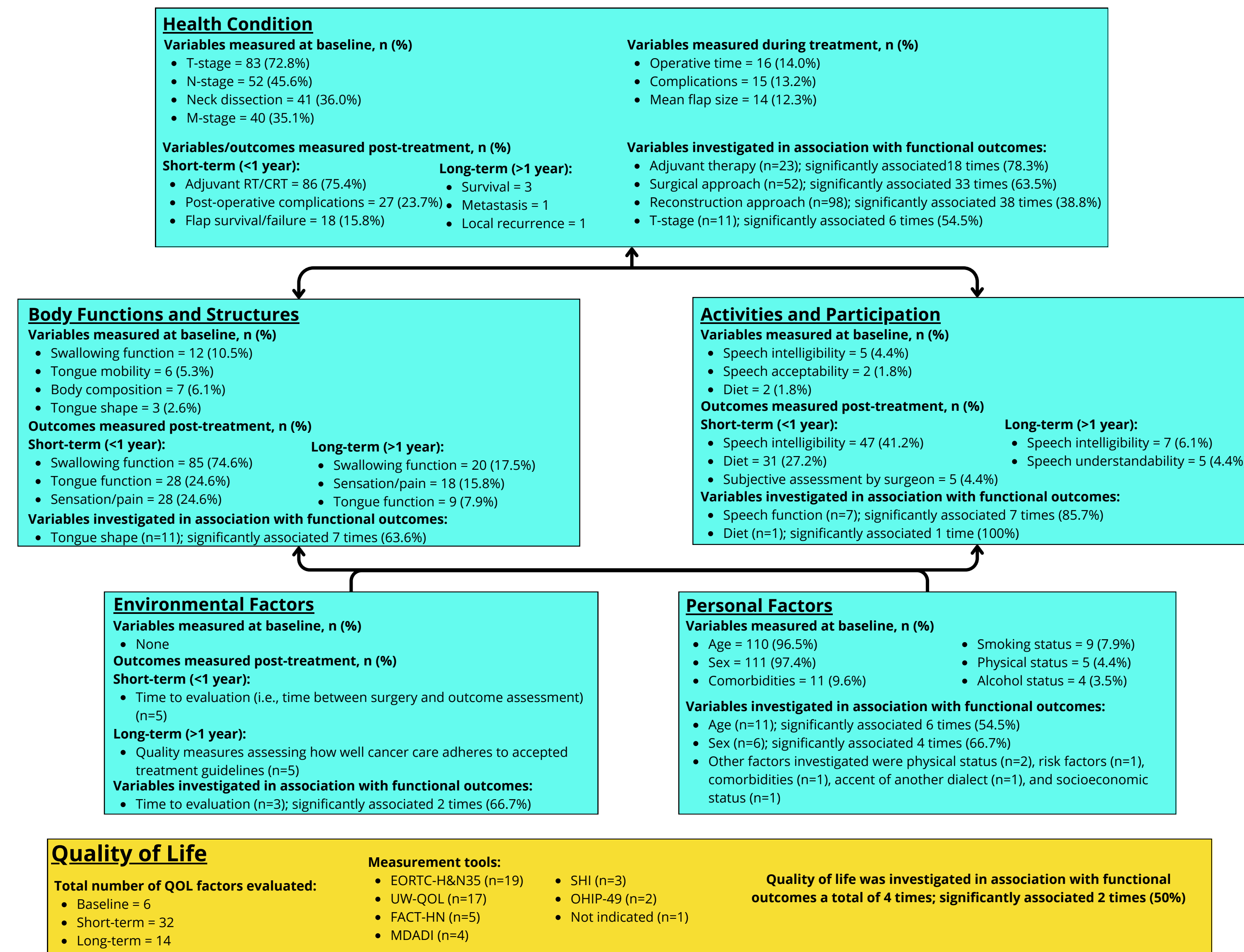MEDLINE, Embase, Scopus, and CINAHL databases.

Study Selection
Inclusion criteria consisted of (1) studies of adult OCC patients with oral tongue or FOM cancer undergoing primary surgery with or without adjuvant therapy, (2) full-text articles written in English, and (3) research performed with a quantitative research design.

Data Extraction
A data collection form was developed by the research team. General information, article characteristics, and details related to the the ICF framework and/or quality of life were extracted in an iterative process.

ICF Framework

Health Condition
Variables measured at baseline, n (%)
- T-stage = 83 (72.8%)
- N-stage = 52 (45.6%)
- Neck dissection = 41 (36.0%)
- M-stage = 40 (35.1%)

Variables measured during treatment, n (%)
- Operative time = 16 (14.0%)
- Complications = 15 (13.2%)
- Mean flap size = 14 (12.3%)

Variables/outcomes measured post-treatment, n (%)
Short-term (<1 year):
- Adjuvant RT/CRT = 86 (75.4%)
- Post-operative complications = 27 (23.7%)
- Flap survival/failure = 18 (15.8%)

Long-term (>1 year):
- Survival = 3
- Metastasis = 1
- Local recurrence = 1

Variables investigated in association with functional outcomes:
- Adjuvant therapy (n=23); significantly associated18 times (78.3%)
- Surgical approach (n=52); significantly associated 33 times (63.5%)
- Reconstruction approach (n=98); significantly associated 38 times (38.8%)
- T-stage (n=11); significantly associated 6 times (54.5%)

Body Functions and Structures
Variables measured at baseline, n (%)
- Swallowing function = 12 (10.5%)
- Tongue mobility = 6 (5.3%)
- Body composition = 7 (6.1%)
- Tongue shape = 3 (2.6%)

Outcomes measured post-treatment, n (%)
Short-term (<1 year):
- Swallowing function = 85 (74.6%)
- Tongue function = 28 (24.6%)
- Sensation/pain = 28 (24.6%)

Long-term (>1 year):
- Swallowing function = 20 (17.5%)
- Sensation/pain = 18 (15.8%)
- Tongue function = 9 (7.9%)

Variables investigated in association with functional outcomes:
- Tongue shape (n=11); significantly associated 7 times (63.6%)

Activities and Participation
Variables measured at baseline, n (%)
- Speech intelligibility = 5 (4.4%)
- Speech acceptability = 2 (1.8%)
- Diet = 2 (1.8%)

Outcomes measured post-treatment, n (%)
Short-term (<1 year):
- Speech intelligibility = 47 (41.2%)
- Diet = 31 (27.2%)
- Subjective assessment by surgeon = 5 (4.4%)

Long-term (>1 year):
- Speech intelligibility = 7 (6.1%)
- Speech understandability = 5 (4.4%)

Variables investigated in association with functional outcomes:
- Speech function (n=7); significantly associated 7 times (85.7%)
- Diet (n=1); significantly associated 1 time (100%)

Environmental Factors
Variables measured at baseline, n (%)
- None

Outcomes measured post-treatment, n (%)
Short-term (<1 year):
- Time to evaluation (i.e., time between surgery and outcome assessment) (n=5)

Long-term (>1 year):
- Quality measures assessing how well cancer care adheres to accepted treatment guidelines (n=5)

Variables investigated in association with functional outcomes:
- Time to evaluation (n=3); significantly associated 2 times (66.7%)

Personal Factors
Variables measured at baseline, n (%)
- Age = 110 (96.5%)
- Sex = 111 (97.4%)
- Comorbidities = 11 (9.6%)
- Smoking status = 9 (7.9%)
- Physical status = 5 (4.4%)
- Alcohol status = 4 (3.5%)

Variables investigated in association with functional outcomes:
- Age (n=11); significantly associated 6 times (54.5%)
- Sex (n=6); significantly associated 4 times (66.7%)
- Other factors investigated were physical status (n=2), risk factors (n=1), comorbidities (n=1), accent of another dialect (n=1), and socioeconomic status (n=1)

Quality of Life
Total number of QOL factors evaluated:
- Baseline = 6
- Short-term = 32
- Long-term = 14

Measurement tools:
- EORTC-H&N35 (n=19)
- UW-QOL (n=17)
- FACT-HN (n=5)
- MDADI (n=4)
- SHI (n=3)
- OHIP-49 (n=2)
- Not indicated (n=1)

Quality of life was investigated in association with functional outcomes a total of 4 times; significantly associated 2 times (50%)
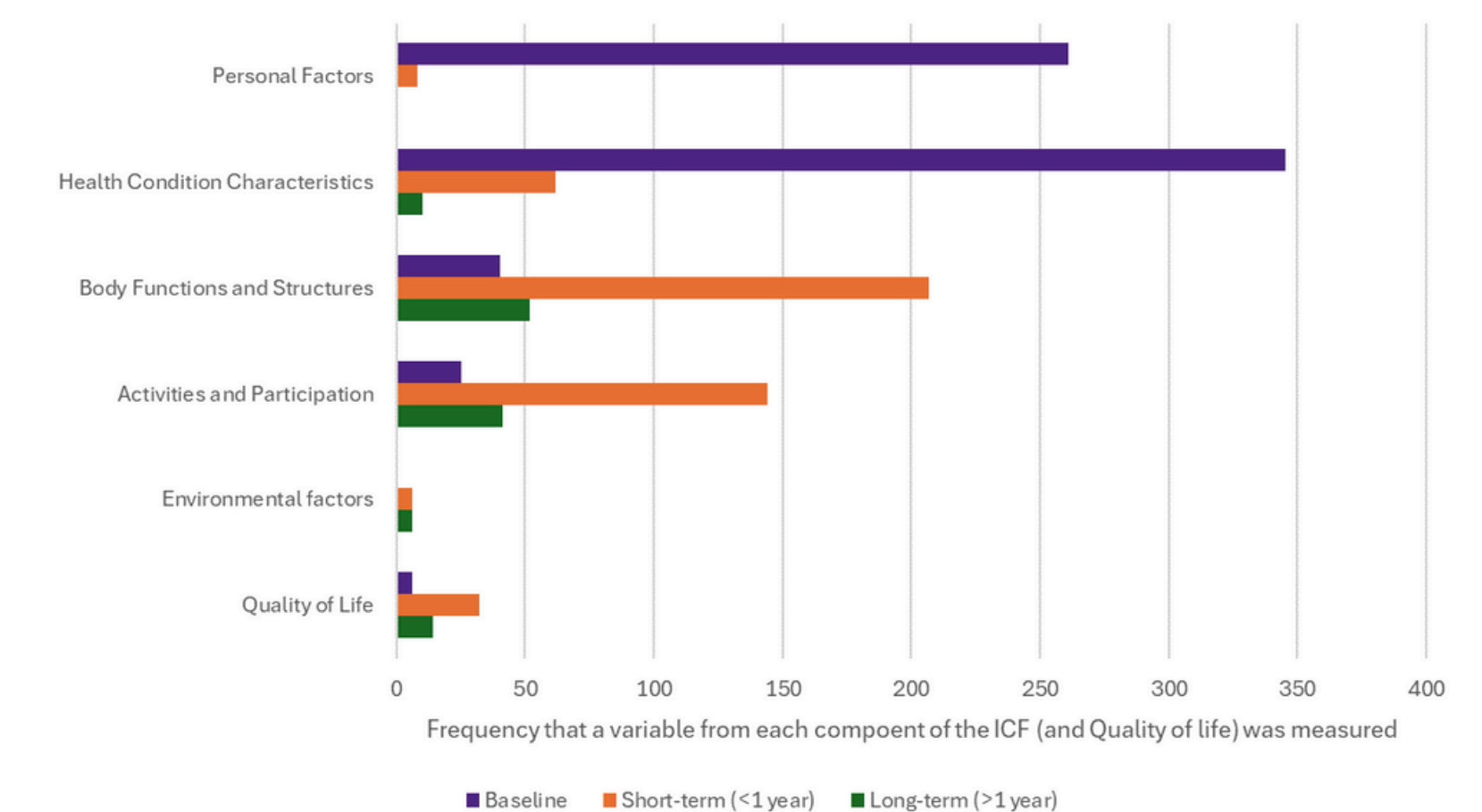
Results

Fig. 2. ICF-based outcome assessment distributed by time

Conclusions

- Lack of standardization in assessment tools, follow-up times, and reporting methods reflects the complexity of treatment and factors influencing functional recovery in OCC but may reduce external validity.
- Need for more long-term data beyond one-year post-treatment to address the prevalence and impact of persistent impairments.
- Insufficient data on predictors of functional outcomes.
- Limited transparency in tools used for the assessment of short-term speech function.
- Assessment of "activities and participation" outcomes lacks consideration for variables related to daily life.
- Limited assessment of "personal factors" beyond age and sex, and scarcity of "environmental factors" were noted.

Results

Fig. 1. PRISMA flow chart for the scoping review process

114 Studies included

Study Design
- Prospective (n = 58; 50.9%)
  - Including 2 randomized controlled trials and 12 case studies/series
- Retrospective (n = 56; 49.1%)

Patient Cohort
- Sample size: 1 to 606 participants
- Average age: 29 to 78 years
- Male participants: 65.6%
- Most common tumor subsite:
  - Oral tongue (n = 86; 75.4%) and FOM (n = 20; 17.5%)

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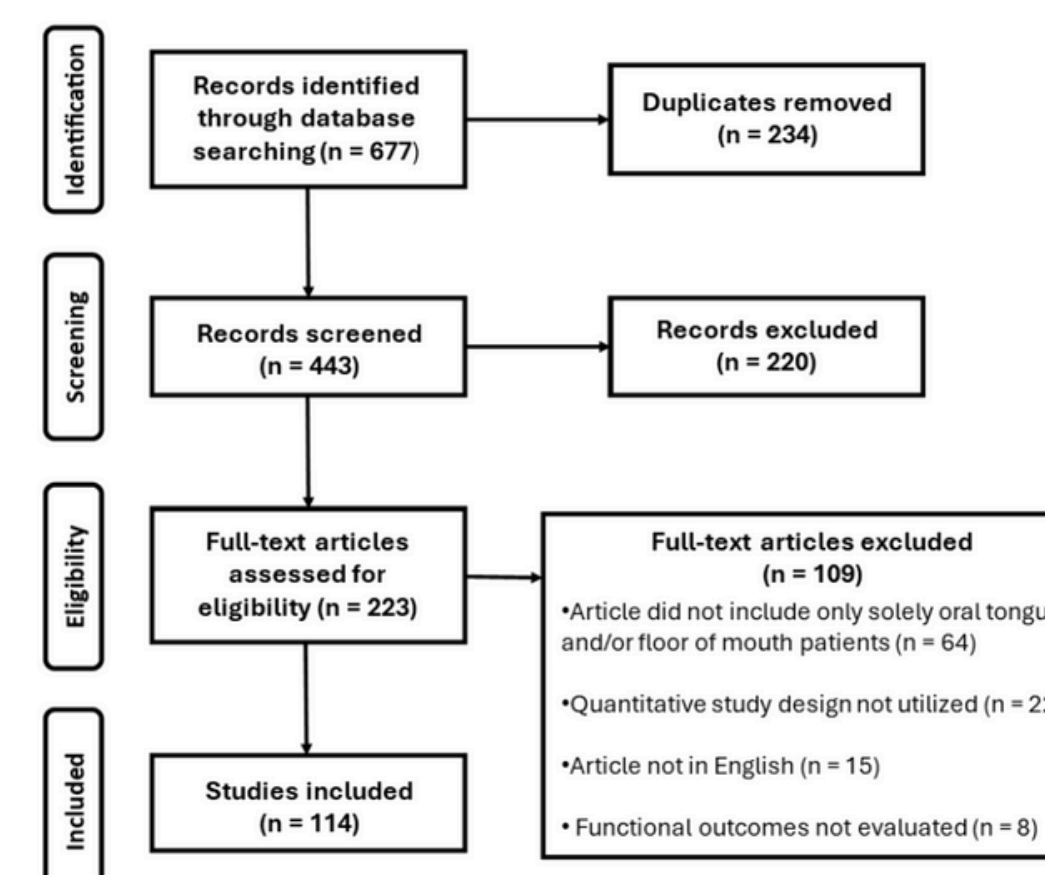6. International Classification of Functioning, Disability, and Health : ICF. Geneva :World Health Organization, 2001.