

VALIDATION OF THE SYMPTOM QUESTIONNAIRE FOR VISUAL DYSFUNCTIONS (SQVD): A PSYCHOMETRIC ANALYSIS WITHIN THE NEPALESE POPULATION

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BACKGROUND AND OBJECTIVE

Background

- Visual dysfunctions affect quality of life and productivity.
- High prevalence of binocular and refractive anomalies in Nepal.
- No validated Nepali symptom questionnaire available.

Objective

- To cross-culturally adapt SQVD into Nepali.
- To evaluate its psychometric properties and diagnostic accuracy.

METHODOLOGY

Study Design

- Multicenter cross-sectional study (Aug–Dec 2025).
- 6 eye hospitals (hilly + Terai regions).
- Participants: $n = 305$ (18–65 years).

Procedure

- Translation: Modified Brislin model.
- Clinical diagnosis: Binocular vision assessment.

Analysis

- Rasch analysis
- ROC curve
- Spearman correlation

RESULTS

- All 14 items showed good fit (0.70–1.30)
- Ordered response categories confirmed
- No significant gender-based DIF
- Minor presbyopia-related DIF (clinically expected)

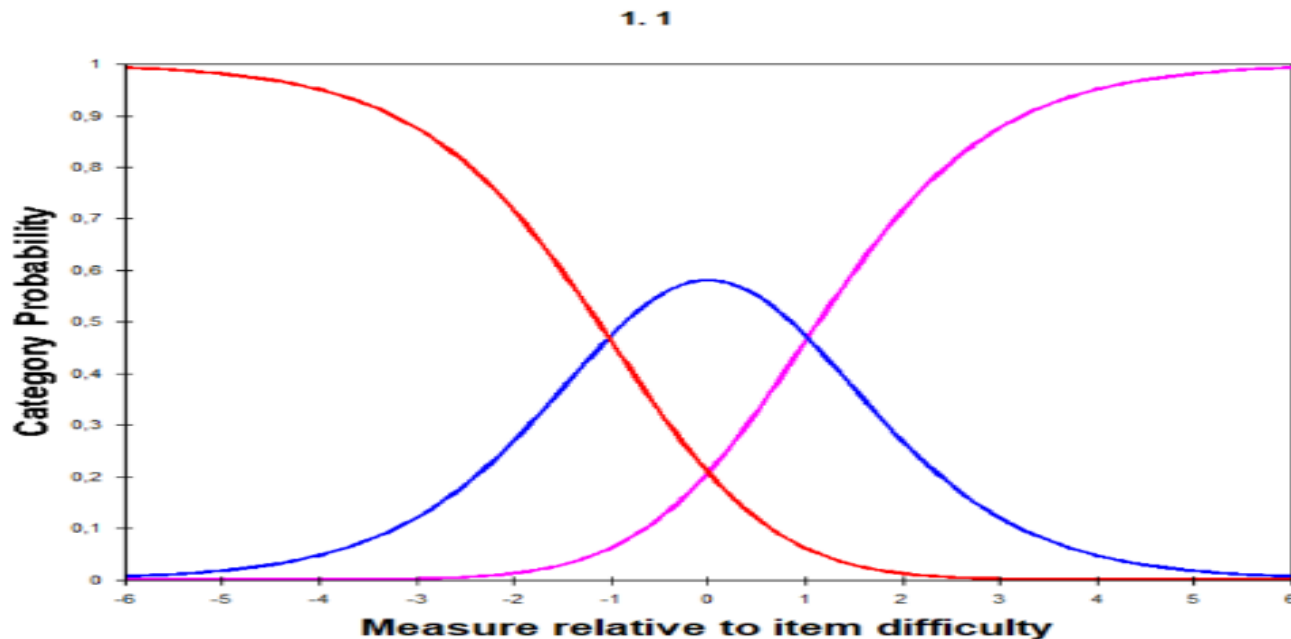
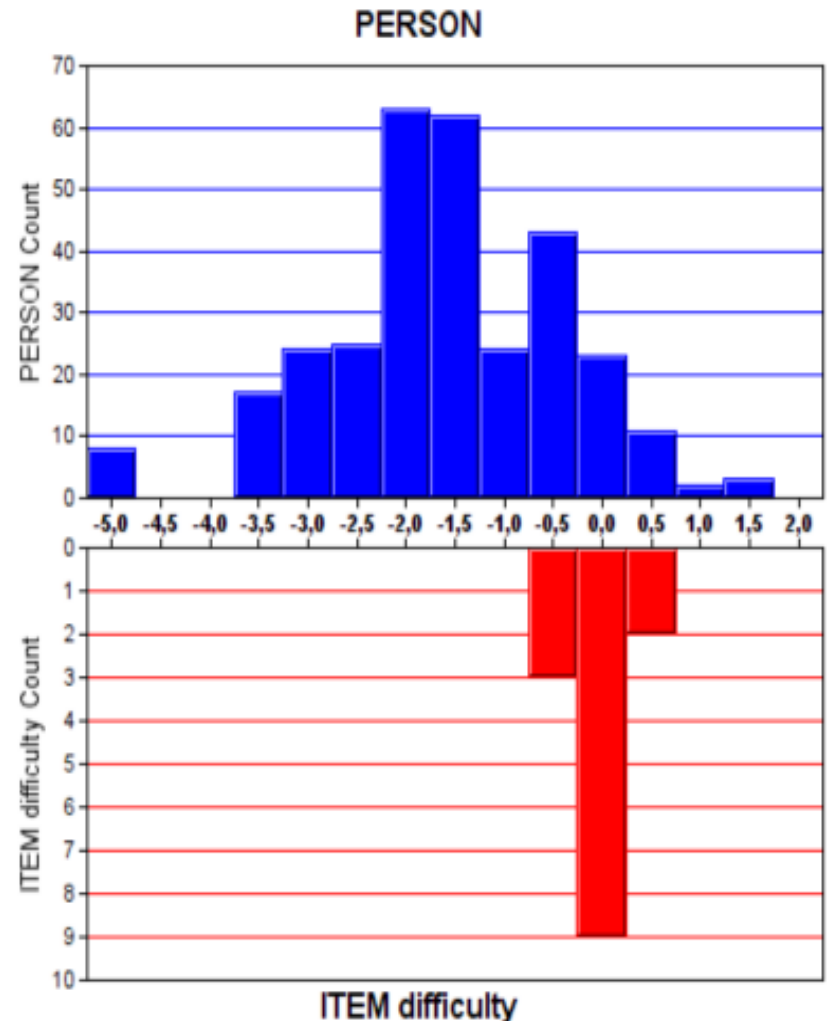


Figure 1. Ordered response categories with separated thresholds, confirming appropriate Likert scale functioning.

RESULTS (RELIABILITY & TARGETING)

- Person reliability = 0.81
- Item reliability = 0.84
- Unidimensional structure confirmed
- Adequate targeting between items and participants

Figure 2. Person-Item Map showing adequate targeting between person abilities and item difficulties.



RESULTS (DIAGNOSTIC ACCURACY)

- AUC = 0.834
(95% CI: 0.789–0.878)
- Optimal cutoff score: ≥ 6
- Sensitivity = 0.714
- Specificity = 0.775

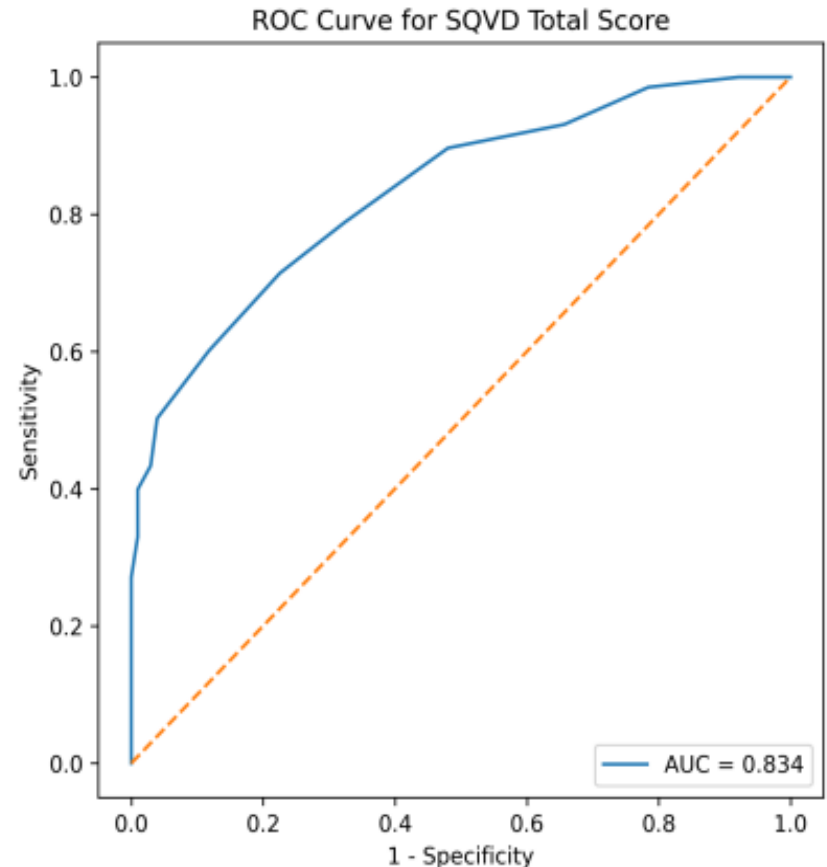


Figure 3. ROC curve (AUC = 0.834). The SQVD total score discriminates well between participants with and without visual dysfunction.

RESULTS (ITEM CORRELATION)

Item-total correlations ranged from **0.326 to 0.613** (all $p < 0.001$), indicating good internal consistency

NEPALI SQVD – FINAL INSTRUMENT

क्र.सं	प्रश्न	हुँदैन	कहिलेकाँही	सधैं
१	हेरेर गर्ने कार्य गर्दा टाउको दुख्ने गर्छ?		हुन्छ→ <input type="checkbox"/>	<input type="checkbox"/>
२	नजिके हेरेर गर्नुपर्ने कार्यहरू गर्दा धमिलो वा अस्पष्ट देखिन्छ?		हुन्छ→ <input type="checkbox"/>	<input type="checkbox"/>
३	हेरेर गरिने कार्य गर्दा आँखा रातो हुने वा दुख्ने गर्छ?		हुन्छ→ <input type="checkbox"/>	<input type="checkbox"/>
४	किताब, कागज, मोबाइल, ट्याबलेट हेर्दा टाउको वा ती वस्तुहरू ढल्काउनुपर्छ?		हुन्छ→ <input type="checkbox"/>	<input type="checkbox"/>
५	पाठ पढ्दा दोहोर्याएर पढ्नुपर्छ?		हुन्छ→ <input type="checkbox"/>	<input type="checkbox"/>
६	कुनै वस्तुमा ध्यान केन्द्रित गर्दा दूरी अनुमान गर्न गाह्रो हुन्छ?		हुन्छ→ <input type="checkbox"/>	<input type="checkbox"/>
७	हेरेर गरिने कार्य गर्दा आँसु आउँछ?		हुन्छ→ <input type="checkbox"/>	<input type="checkbox"/>
८	नजिक-टाढा हेर्दा ध्यान केन्द्रित गर्न गाह्रो हुन्छ?		हुन्छ→ <input type="checkbox"/>	<input type="checkbox"/>
९	हेरेर गरिने कार्य गर्दा घाँटी वा ढाड दुख्छ?		हुन्छ→ <input type="checkbox"/>	<input type="checkbox"/>
१०	हेरेर गरिने कार्य गर्दा आँखा सुख्खा वा बिझाउने हुन्छ?		हुन्छ→ <input type="checkbox"/>	<input type="checkbox"/>
११	राम्ररी हेर्न आँखा सानो पार्नुपर्छ?		हुन्छ→ <input type="checkbox"/>	<input type="checkbox"/>
१२	हेरेर गरिने कार्य गर्दा निद्रा लाग्छ?		हुन्छ→ <input type="checkbox"/>	<input type="checkbox"/>
१३	हेरेर गरिने कार्य गर्दा ध्यान केन्द्रित गर्न गाह्रो हुन्छ?		हुन्छ→ <input type="checkbox"/>	<input type="checkbox"/>
१४	हेरेर गरिने कार्य गर्दा अत्यधिक रुचाएको सदस्य देख्ने?		हुन्छ→ <input type="checkbox"/>	<input type="checkbox"/>

CONCLUSION: TAKEAWAY MESSAGES

- The Nepali SQVD is a psychometrically robust instrument with good reliability and unidimensionality
- It shows good diagnostic accuracy (AUC = 0.834) with cutoff ≥ 6
- It is culturally adapted and validated for the Nepalese population
- It provides a practical screening tool for early detection of visual dysfunctions .

CLINICAL / PUBLIC HEALTH IMPACT

- Useful in low-resource clinical settings
- Enables early detection of visual dysfunctions
- Supports referral and triage decisions
- Helps optimize eye care resources in Nepal

PRESENTER INFORMATION



Umesh Belbase is a Consultant Optometrist based in Nepal, affiliated with Lumbini Netralaya, Butwal. He has expertise in binocular vision and specialty contact lenses, with research interests in visual dysfunctions, psychometric validation, and diagnostic technologies, and publications in peer-reviewed journals.