

# Health-related Quality of Life Outcomes and Associated Factors in Young Adults with Experience of Severe Malaria in Uganda: A Cross-sectional Comparison with Community Controls

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## Introduction

Evidence shows long-term impact of severe malaria (SM) on patient's learning, cognitive and behavioral functions yet, little is known about the impact of SM on the health-related quality of life (HRQoL) of survivors.

**Major Objective:** As part of the Malaria Impact on Neurobehavioral Development (MIND) study, we compared HRQoL between young adults that experienced different forms of SM with community children (CC) in Uganda.

## Methods

We gathered cross-sectional data from a longitudinal cohort of SM patients and CC using EuroQol EQ-5D-3L and EQ-VAS tools. Data included socioeconomic and clinical information. Distribution of EQ-5D and EQ-VAS values were presented as means and percentages based on respondent's characteristics between two groups.

Pearson chi-square test for association and non-parametric tests for mean difference were used to establish difference in means; a two-stage Instrumental variable regression analysis to establish causal-effect of SM on HRQoL. We obtained approval from relevant research ethics committees in Uganda and Norway

## Results

About 189 respondents aged  $\geq 12$  years were included. 121 of 189 experienced SM, majority of respondents were; males (55%), age range 12-14 years (60%) while 19% aged  $\geq 18$  years. Compared to CC, more respondents in SM reported having moderate problems with mobility (12% vs 3%), Pain (36% vs 26%) and anxiety (12% vs 10%) dimensions. Mean EQ-5D index ( $0.900 \pm 0.11$  vs  $0.924 \pm 0.11$ ,  $p > 0.05$ ) and EQ-VAS scores ( $83.50 \pm 21.63$  vs  $86.84 \pm 14.9$ ,  $p > 0.05$ ) were lower for respondents in SM group compared to CC respectively. In regression analysis, in reference to CC, experience of SM in forms of; cerebral malaria (-0.18, 95% CI -0.34, -0.02,  $P = 0.025$ ) and severe malaria anemia (-0.16, 95% CI -0.29, -0.04,  $P = 0.008$ ) was associated with reduced EQ-5D index. Doing a paid work increased EQ-5D index, while previous hospital admission reduced EQ-5D index.

Table. 1 Multivariate analysis of factors associated with HRQoL

Variables	EQ-5D Index Coefficients 95% CI	P-values
Severe malaria		
CC vs CM	-0.183 (-0.343, -0.233)	0.025*
CC vs SMA	0.164 (-0.286, -0.418)	0.008*
EQ-5D VAS	0.001 (0.000, 0.002)	0.014*
Patient age	0.008 (-0.015, -0.002)	0.013*
Hospital admission (Yes)	0.043 (-0.090, 0.003)	0.066
Vision problems (Yes)	-0.0001 (-0.059, 0.058)	0.997
Taking medication (Yes)	0.032 (-0.023, 0.088)	0.257
Doing paid work (Yes)	0.053 (0.005, 0.100)	0.030*
Study site (Kampala)	0.108 (-0.033, 0.248)	0.133
School type		
Day vs Boarding	-0.039 (-0.142, 0.063)	0.454
Day vs Day & Boarding	0.015 (-0.019, 0.049)	0.387
N	180	

CC - Community children, CM - Cerebral Malaria, SMA - Severe Malaria Anemia, CI - Confidence Interval, \* Significant values at 95% CI

## Conclusion

We found a negative association between Health-related quality of life and exposure to severe malaria among children and young adults in reference to community children. Severe malaria can potentially undermine long-term individual HRQoL through its negative impact on individual learning, cognitive and behavioural abilities.

