Reviewer's report

Title: Fuzzy Cognitive Map Technique for Meningitis Diagnosis Support Among Infants and Children

Version: 1  Date: 16 April 2012

Reviewer: Faith-Michael Uzoka

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General Comments
Overall grammar of the paper needs improvement. Paper lacks good organization especially in the early sections. The model development should focus on the fuzzy cognitive map and the fuzzy cognitive map modeling of meningitis symptoms and diagnosis. Sections need to be properly numbered. Graphs and figures need to be drawn in a publishable form and clearly labeled. They are currently not showing nicely

Specific Comments
Pages 10 and 11: The authors need to clearly show how the numbers 0.232, 0.464, 0.696, etc.

Page 12: The authors need to explain why a bi-value evaluation of the symptoms (ON and OFF). There is no accounting for degree of manifestation (existence) of each symptom in a patient. The authors utilized a set of rules determined by some physicians. It would be nice to show a portion of the rule base (at least 20 rules). What is the basis of rule multiplication by 0.75 and 0.25? How did the authors arrive at the crisp weights based on 'max' aggregation, centroid defuzzification, and mamdani inference methods.

Page 14: Why should lambda exceed 1? This tends to contradict the preamble that precedes the actual FCM algorithm.

Page 15: Lambda = 0.3 is identified as the most accurate predictive lambda value. What are the implications of this to practice? There is need for a thorough discussion on this. Why is this most accurate lambda value? Discuss the relevance of the results as it relates to other lambda values.

Page 16: Surely, this study is not without limitations. Authors need to clearly discuss the limitations of the work.

Page 20: Table 3 (on page 21) tends to make Table 1 redundant.

Page 21: There is a significant confusion about the difference between symptoms of meningitis and lifestyle issues that can increase risk of meningitis. Table 3 tends to imply that high economic status and good nutrition have some direct relationship with meningitis diagnosis. This is questionable, and authors need to clearly show the validity of this or redo the analysis (separating symptoms from risk factors). Furthermore, how does Table 3 show the strength of connection among concepts (as indicated in the body of the paper)? It only
shows causal weights with respect to meningitis.

Figure 2: What is the difference between the pair-wise causal relationship analysis shown here and the use of analytical hierarchy process (Saaty 1981)? See Uzoka et al - An experimental comparison of fuzzy logic and analytic hierarchy process for medical decision support systems

The textbox shown in the appendix is not necessary.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

No competing interests.