Method for Classifying Geriatric Health: A Real World Statistical Application of Frailty Index

Background: Frailty is measured in regard to the build-up of deficits employing a Frailty Index (FI). It is a good method to classify geriatric health and totally a new concept in Bangladesh. The objective of the present study is to describe a standard procedure to classify geriatric health computing a frailty index.

Methods: Elderly persons aged 55 or more (n=400) who had received a health investigation and a clinical test are studied. Thirty indicators related to geriatric health deficit has been collected to construct the FI. Generally, the range of the frailty index can be $0 \leq FI_{30} \leq 1$. With these frailty indices, the geriatric health has been classified into- No Frail ($FI30 \leq 0.10$), Vulnerable ($0.10 < FI_{30} \leq 0.21$), Frail ($0.21 < FI_{30} \leq 0.45$) and Most Frail ($FI_{30} > 0.45$) where all the classification is evident. The Chi-square test of association and Binary logistic regression analysis has been carried out to identify the significant socio-demographic factors that affect elderly frailty.

Results: Processes for choosing geriatric health indicators as deficits were applied to yield 30 deficits and recoding techniques were used such that they could be represented to the interval 0–1, wherever 0 = absence of deficit, and 1= completely presence of deficit. The values of the frailty index (FI_{30}) were well fit by a Weibull Distribution and almost all individual frailty score lies in the FI_{30} range 0.1 to 0.5. Most of the elderly were frail (65.3%) where the other percentages were 5.3%, 21% and 8.5% for the non-frail, vulnerable and most frail respectively. The age, marital status, occupation and religion of the elderly are significantly associated with the frailty. Respondent aged 70 or more, illiterate, the person who is not regular in work and Muslim elderly are frailer than their counterparts. Female elderly is 2.08 times more likely to be frail (OR = 2.08, 95 % CI: 1.14–3.80, $p<0.05$) than male.

Conclusions: As far as we know, this study is the first classifying geriatric health with this direction in Bangladesh. This method of classifier will introduce a new dimension in geriatric health policymaking in Bangladesh.