Vaccine Attitudes Scale (VAS) Items and Scoring Procedure

Parental attitudes about childhood vaccination are ever-changing and can range from complete acceptance of all vaccines to an absolute and unyielding rejection. To assess the parental/caregiver attitudes toward childhood vaccination in a low-income setting, the Vaccine Attitudes Scale (VAS) was used. In this study, the VAS scale has been used to measure the parental/caregiver attitudes toward childhood vaccination in the slums of Dhaka North and South City Corporations. The VAS scale is composed of 14 items on a Likert scale covering the parental vaccine perceptions, concerns, disease salience, and perceived community benefits.

The VAS scale was divided into two subdomains: 1. Vaccine perceptions and concerns (10 items) and 2. Disease salience and community benefits (4 items). Each item was measured using a five-point Likert scale ranging from strongly agree=1 to strongly disagree=5. The total possible score ranged from 14 to 70 in the VAS, where the higher score represented negative attitudes and perceptions of parents toward childhood vaccination. Eight of the Likert scale items of the VAS were reverse-coded before score calculation.

VAS items

Item No	**Statement**	
1.	Children get more vaccinations than are actually good for them.	Reverse coded
2.	Healthy children do not need vaccinations.	Reverse coded
3.	Vaccinations do more harm than good.	Reverse coded
4.	It is better for my child to develop immunity by getting sick than to get a vaccination.	Reverse coded
5.	I should be allowed to selectively choose the vaccines which I believe my child needs.	Original coded
6.	It is better for my child to receive two injectable vaccines in one visit rather than one injectable vaccine in two visits.	Original coded
7.	I am concerned my child might have a serious side effect from vaccination.	Reverse coded
8.	Following the vaccination schedule is a good idea for my child.	Original coded
9.	Parents who do not vaccinate their children should be penalized with a monetary fine.	Original coded
10.	I would like to be a volunteer advocate for vaccination in my community if I am trained.	Original coded
11.	I believe many of the illnesses which vaccines prevent are severe.	Original coded
12.	When I see a child or a picture of a child with either Polio, Diphtheria, Pertussis (whooping	Original coded

	cough), tetanus, hepatitis B, pneumonia, meningitis, or measles, I am reminded of the need for vaccination.	
13.	When my child is vaccinated, it benefits my entire community by reducing the spread of disease.	Original coded
14.	When a parent refuses to vaccinate a child, it harms the entire community through the risk of disease.	Original coded

Score calculation

"Low" scores were defined as a score <31 on the VAS, <23 on the vaccine perceptions and concerns subscale, and <7 on the disease salience and community benefit subscale. "High" scores were defined as a score ranging between 31-70 on VAS, 23-50 on the vaccine perceptions and concerns subscale, and 7-20 on the disease salience and community benefit subscale.

The total VAS score and both the subscale's score was calculated by summing all item scores after reverse coding where appropriate. Lower VAS scores indicated more favorable attitudes toward vaccination, whereas higher scores reflected greater vaccine hesitancy and concerns regarding vaccination.

Cutoff point estimation

The optimal cutoff value for the VAS score was determined using receiver operating characteristic (ROC) curve analysis, selecting the point that maximized the Youden Index. A cutoff value of 31 was identified based on the highest Youden Index on VAS, 23 on the vaccine perceptions and concerns subscale, and <7 on the disease salience and community benefit subscale, providing the best balance between sensitivity and specificity.