



Correlates of completing routine vaccination among children in Mysore, India

Soumyadeep Mukherjee¹; Karl Krupp^{1,2} ; Vijaya Srinivas²; Poornima Jaykrishna² ; Reshma Shaheen² ; Anjali Arun²; Bhavana Niranjakumar²; Purnima Madhivanan^{1,2}

¹Robert Stempel College of Public Health, Florida International University, Miami, USA; ²Public Health Research Institute of India, Mysore, India

Background

- Expanded Program on Immunization (EPI) established by the WHO in 1974.
- Initially targeted vaccine preventable diseases (VPD) like Tuberculosis, Poliomyelitis, Diphtheria, Tetanus, Pertussis, Measles.
- Nearly 20 million children incompletely vaccinated in 2010.
- India, Nigeria and Indonesia: 53% of under-vaccinated children

Immunization in India

- 1978: India adopted the Expanded Program on Immunization.
- 1985: Universal Immunization Program(UIP) introduced.
- Objective of UIP: immunization coverage of all infants and pregnant women by the 1990s.
- 2012 estimates: 70-87% coverage for different routine vaccines.
- National Family Health Survey-3 (NFHS-3), 2005-06: Less than 45% immunization coverage.

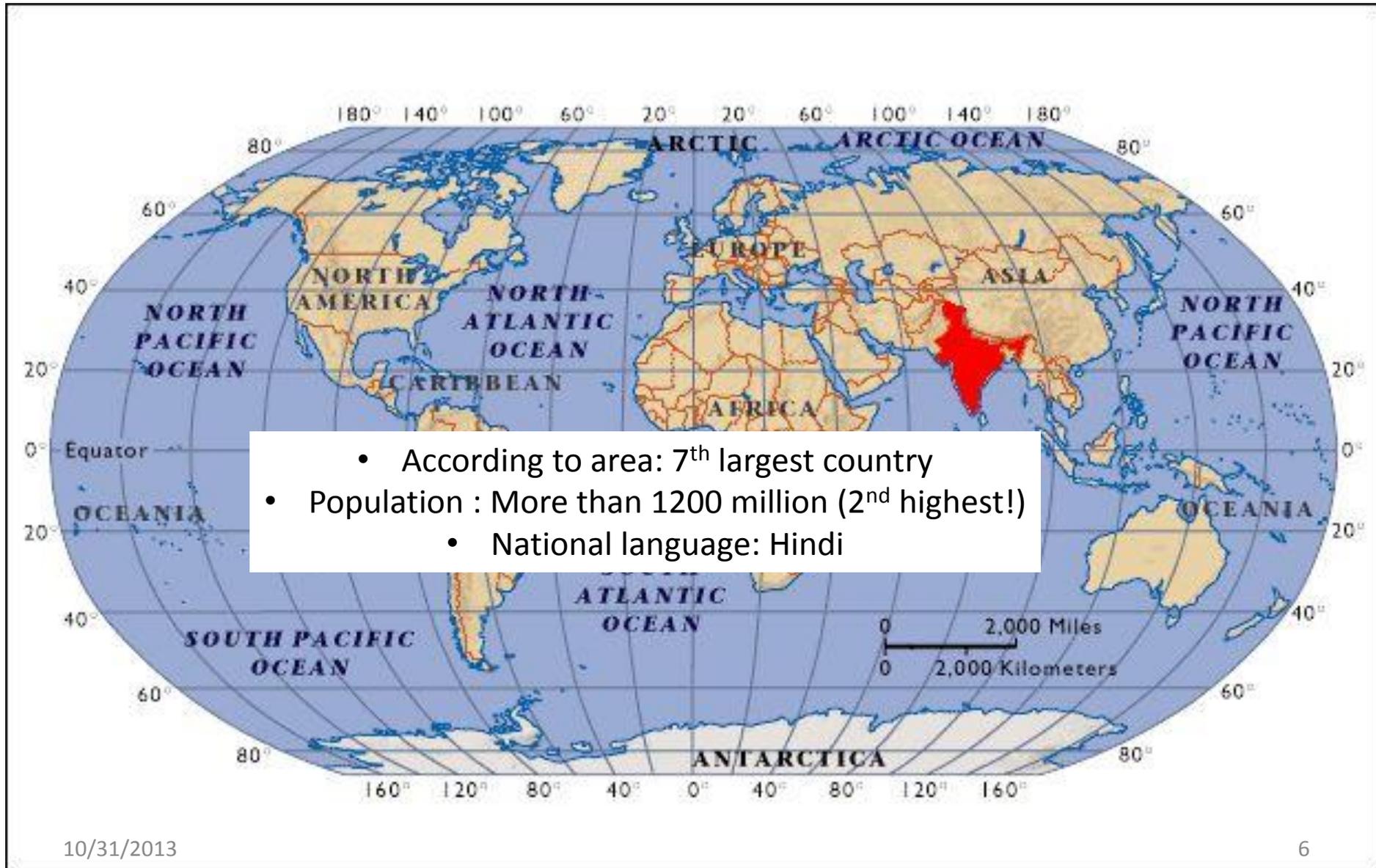
Some factors associated with under-vaccination in India

- Role of parental attitudes in vaccination completion
 - studies are rare.
- Lack of faith in vaccination at the family level.
- Lack of knowledge about vaccine efficacy.
- Fear of side effects.
- Lack of family support.
- Lack of motivation and information.

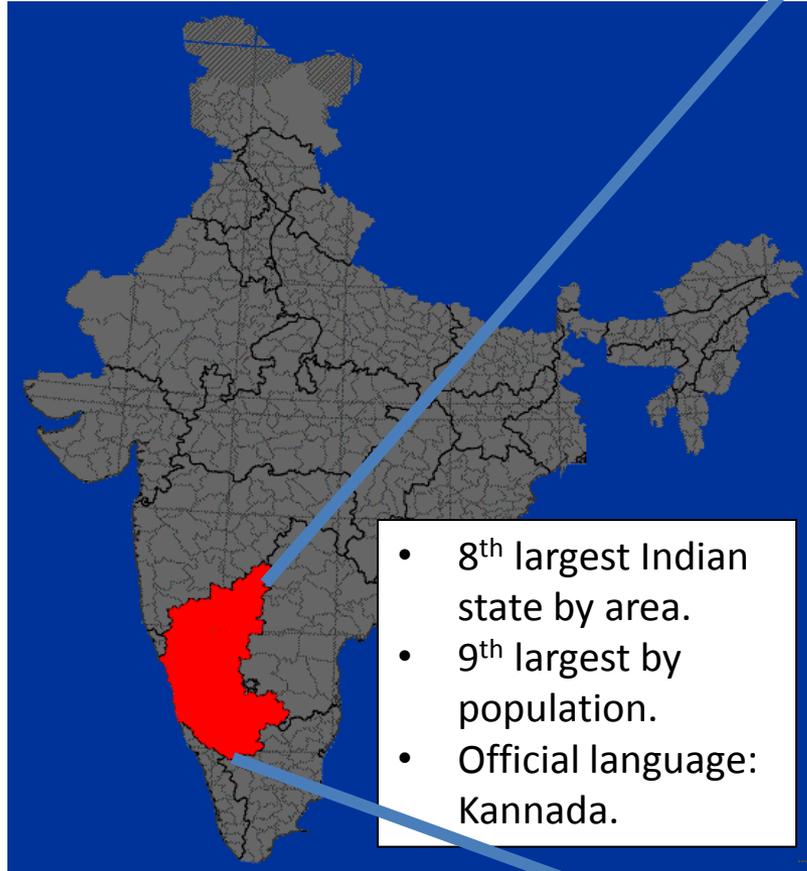
Study objective

To examine the correlates of complete routine vaccination among children in the South Indian city of Mysore in Karnataka.

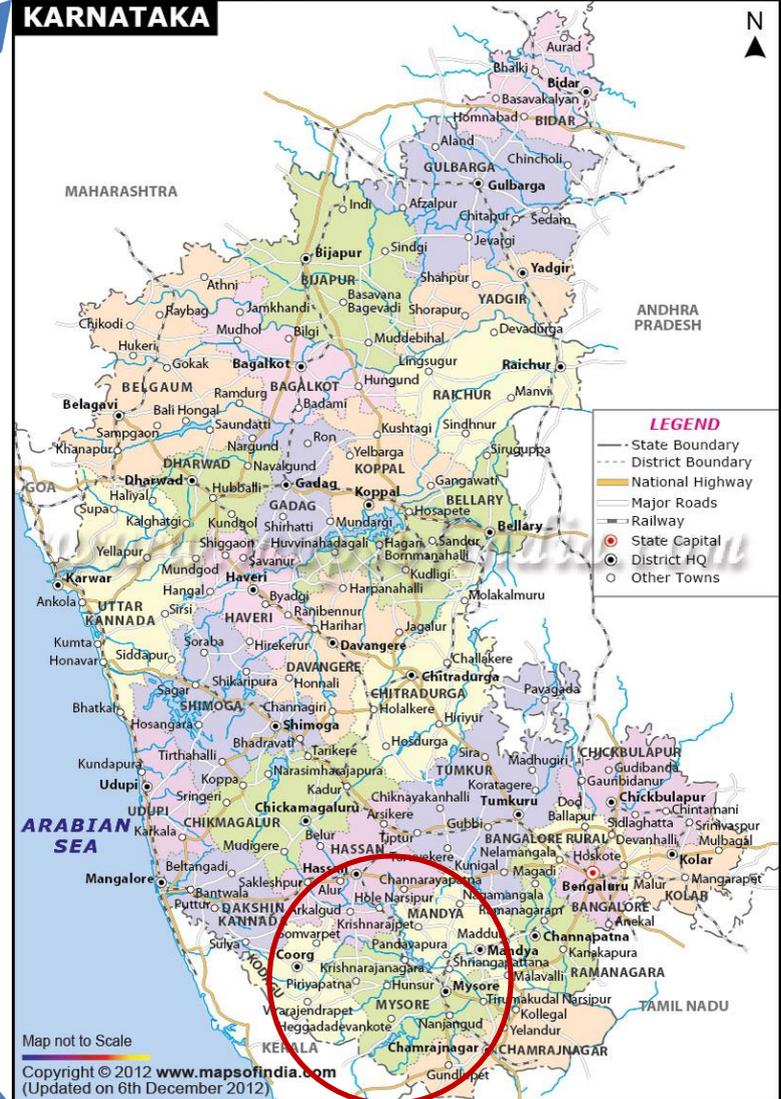
Study setting: India



Study setting: Karnataka



- 8th largest Indian state by area.
- 9th largest by population.
- Official language: Kannada.

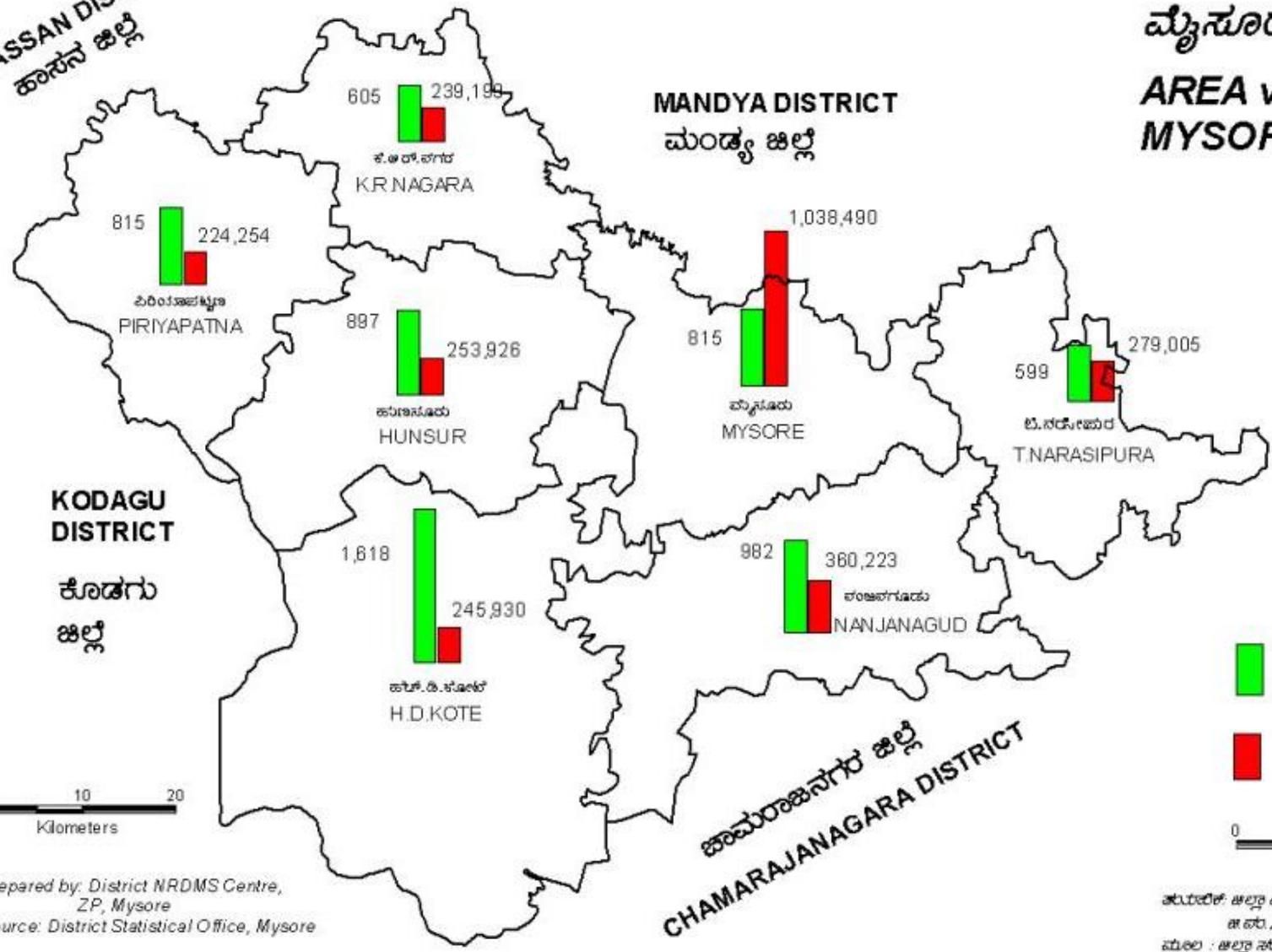


HASSAN DISTRICT
ಹಾಸನ ಜಿಲ್ಲೆ

ವಿಸ್ತೀರ್ಣ / ಜನಸಂಖ್ಯೆ
ಮೈಸೂರು ಜಿಲ್ಲೆ

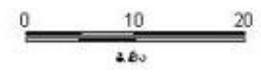
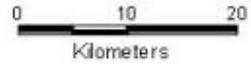
AREA vs POPULATION
MYSORE DISTRICT

MANDYA DISTRICT
ಮಂಡ್ಯ ಜಿಲ್ಲೆ



KODAGU DISTRICT
ಕೊಡಗು ಜಿಲ್ಲೆ

ಚಾಮರಾಜನಗರ ಜಿಲ್ಲೆ
CHAMARAJANAGARA DISTRICT



Prepared by: District NRDMS Centre,
ZP, Mysore
Source: District Statistical Office, Mysore

ತಯಾರಿಸಿದ: ಜಿಲ್ಲಾ ನಿಸ್ಸಂಖ್ಯಾ ಮತ್ತು ಜನಗಣತಿ ಕೇಂದ್ರ
ಆ.ನ.ವಿ., ಮೈಸೂರು
ಮೂಲ : ಜಿಲ್ಲಾ ಸಂಖ್ಯಾ ಸಂಗ್ರಹಣಾಭಿವೃದ್ಧಿ ಕೇಂದ್ರ

Methods

- Participants: 800 parents of at least one adolescent daughter attending a school in Mysore.
- 2-stage probability proportional to size sampling.
- Self-administered questionnaires in English or *Kannada*.
- Study approved by IRB of the Public Health Research Institute of India.
- Questions:
 - Perceived barriers towards getting children vaccinated
 - Perceived benefits of vaccination
 - Knowledge, attitudes and practice related to utilizing health care for the child.

Methods (contd.)

- Outcome variable:
 - Complete immunization of all children: Parents who replied that all of their children received all the UIP vaccines.
 - Unimmunized or incompletely immunized: All other parents
- Data analysis: Using software SAS, Version 9.3
 - Descriptive statistics
 - Bivariate and multivariable logistic regression adjusted for clustering.

Figure 1: Distribution of parents (%) according to complete vaccination of their children (N=778)

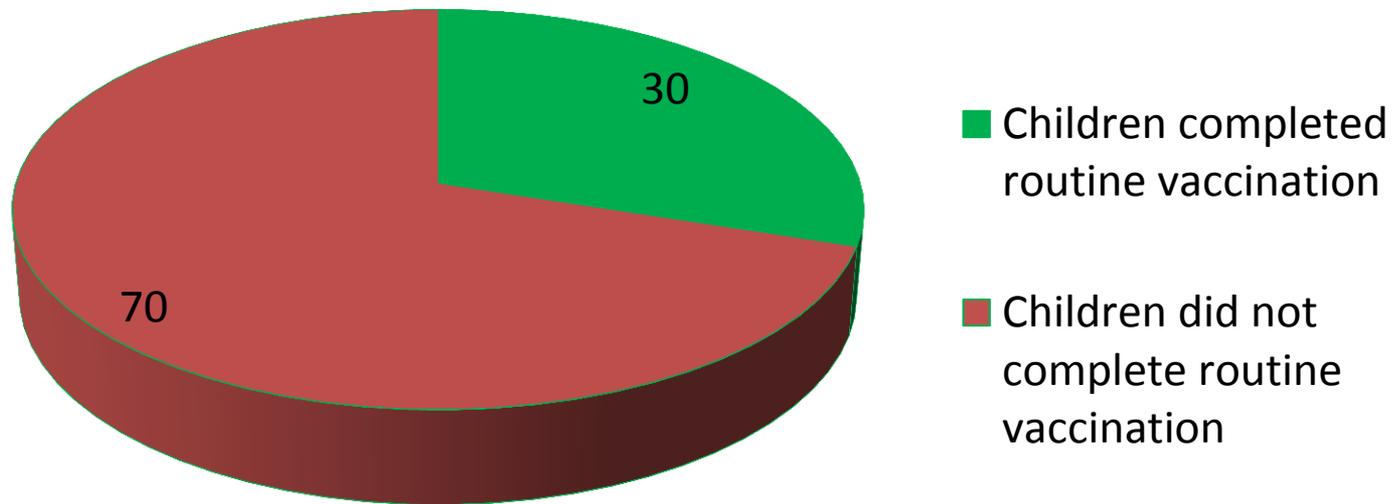


Figure 2: Parents' "belief in vaccines' effectiveness" and complete vaccination of children

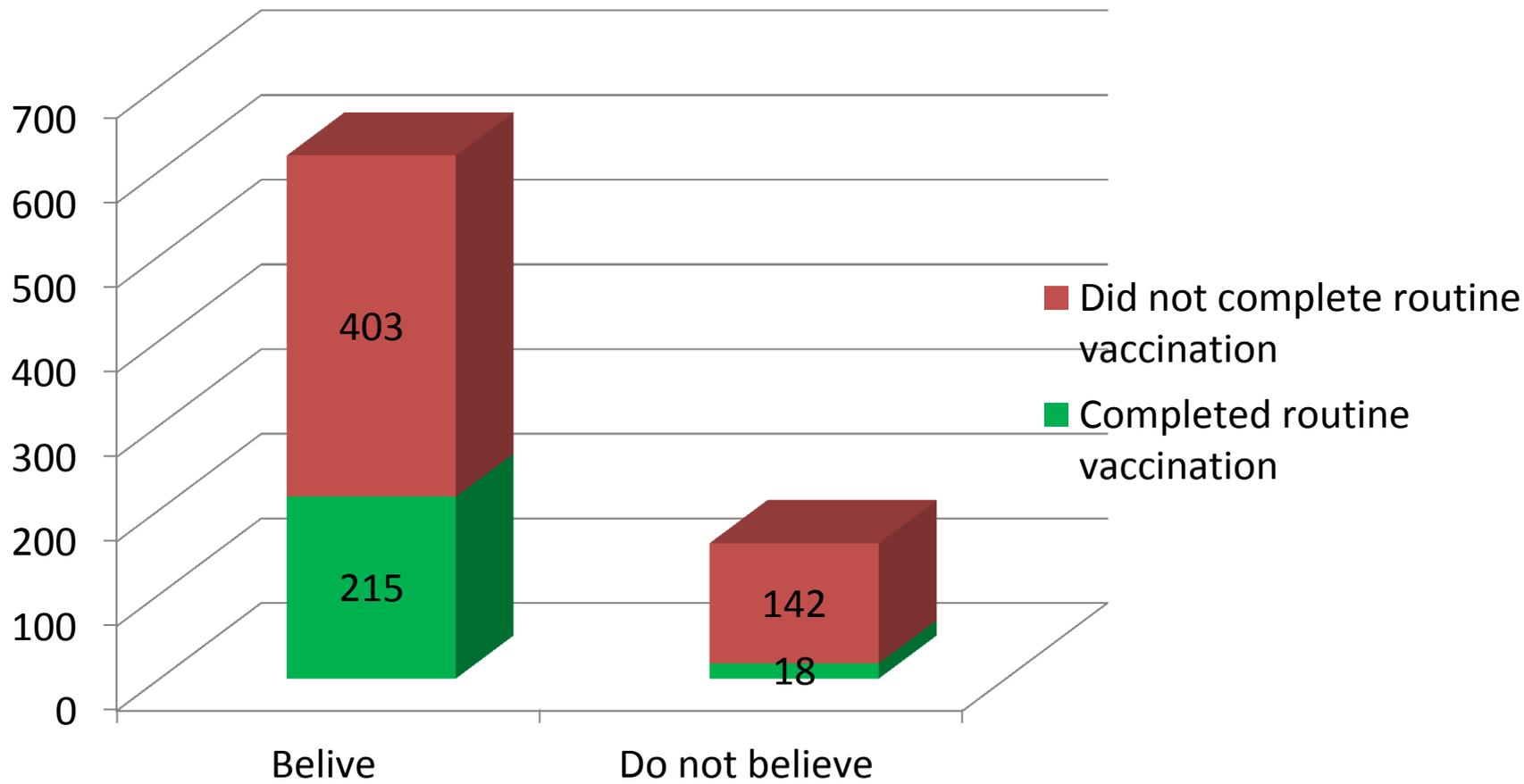


Figure 3: Parent's fear of vaccinating children and children's complete vaccination (N=778)

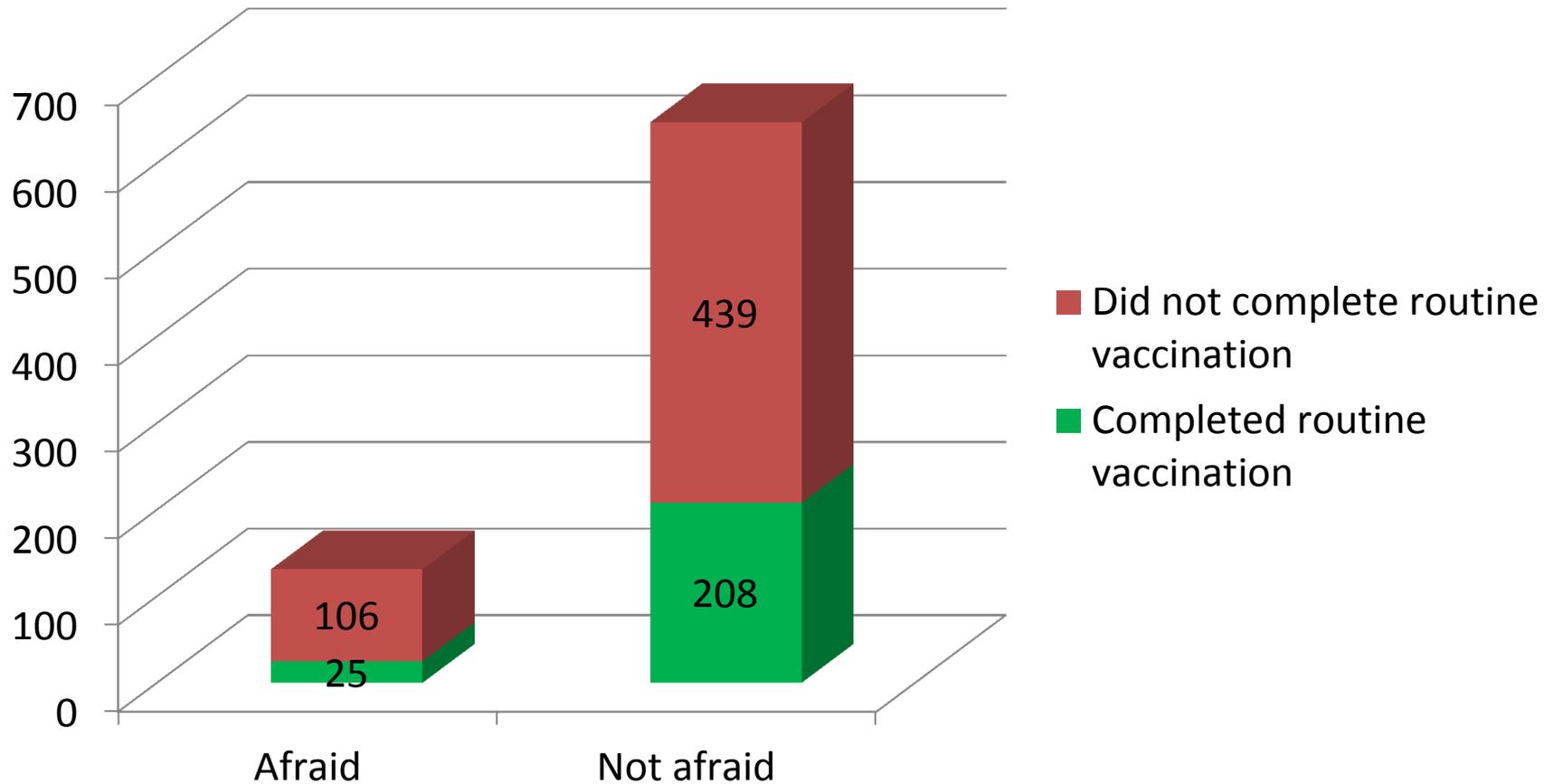


Figure 4: Parent's belief that disease is better than vaccination and children's complete vaccination (N=778)

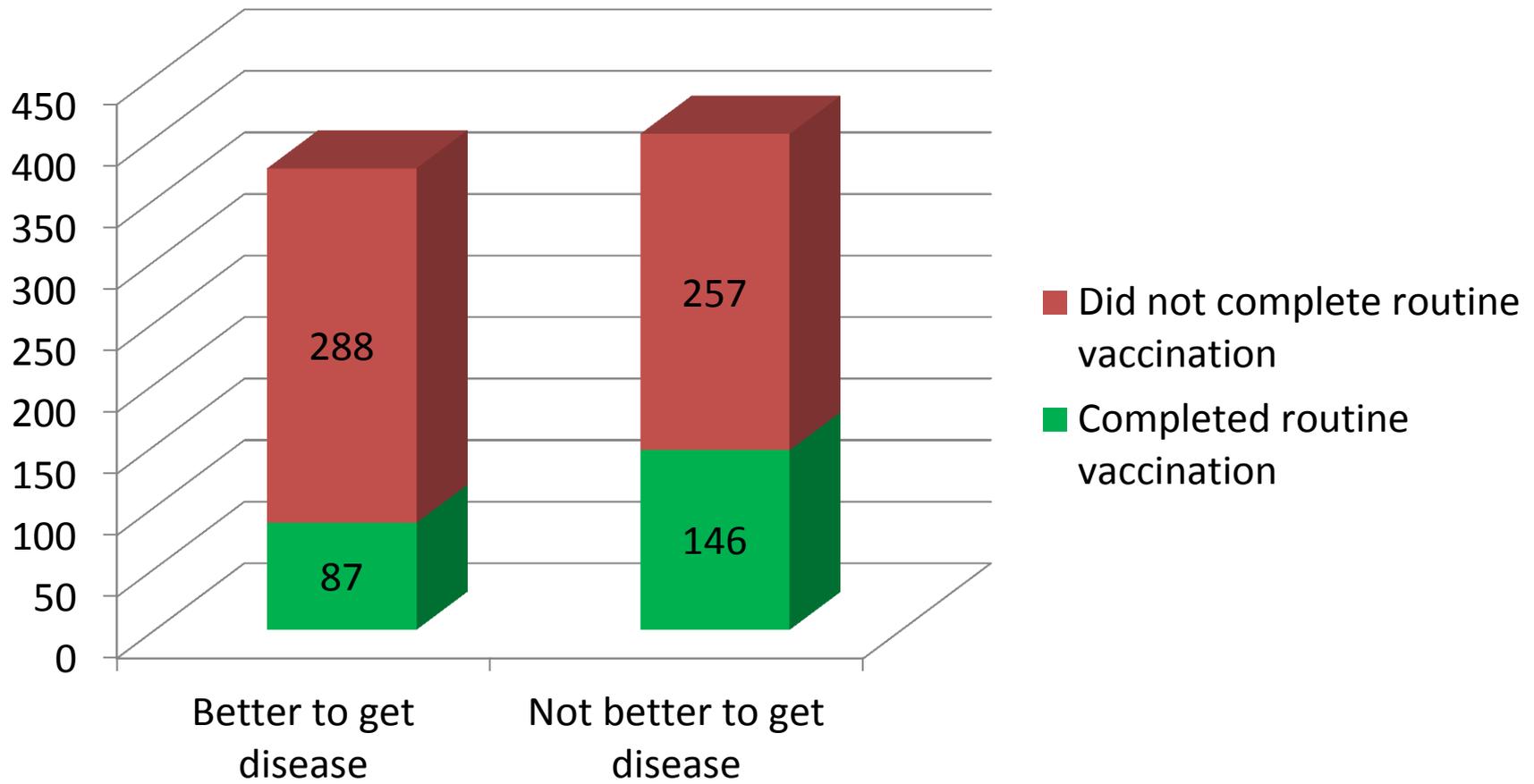


Figure 5: Parent's knowledge about where to get vaccination and children's complete vaccination (N=778)

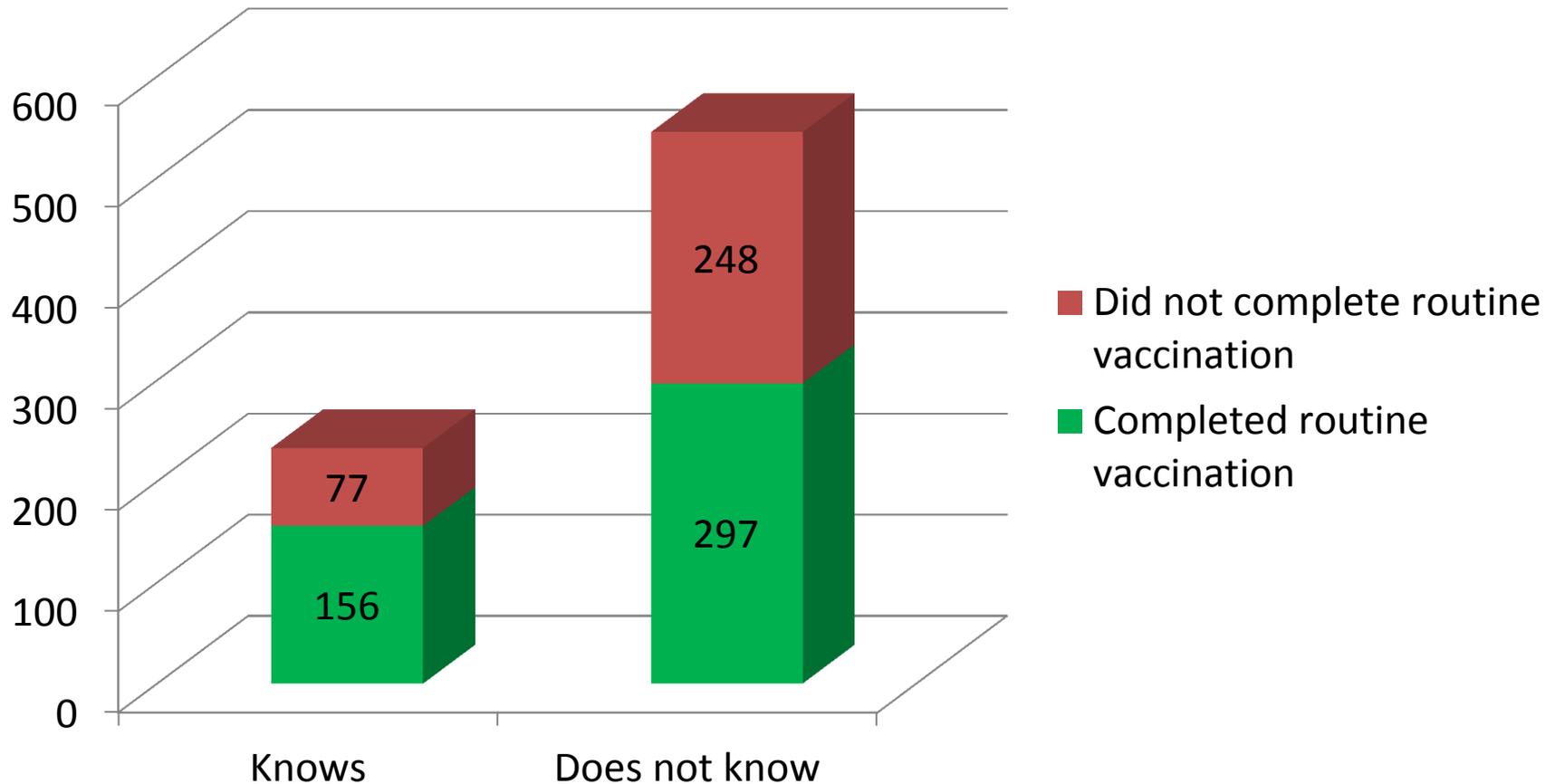


Figure 6: Parent's difficulty in taking time off work and children's complete vaccination (N=778)

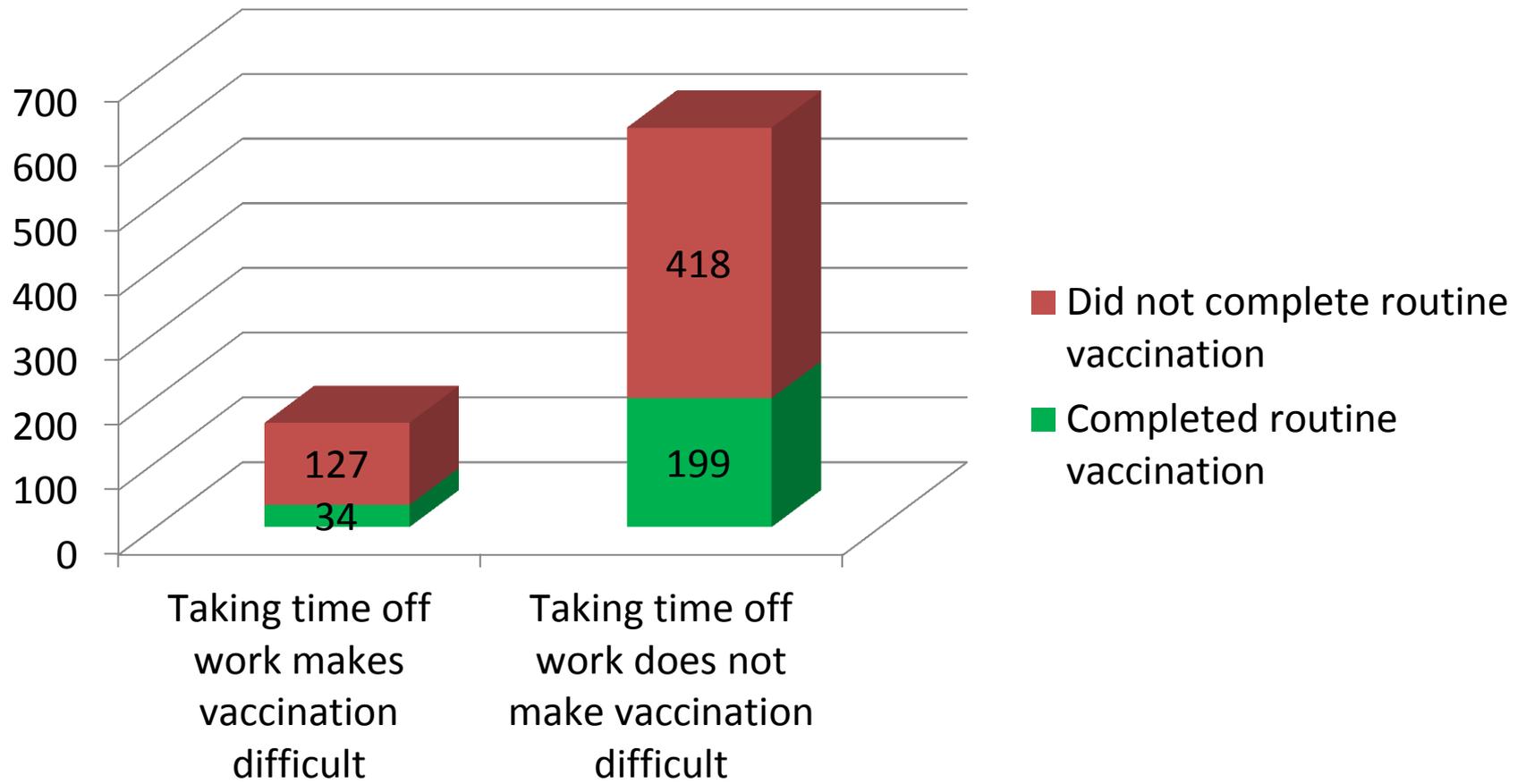


Figure 7: Parent's tendency to ask doctors/nurses about vaccination and children's complete vaccination (N=778)

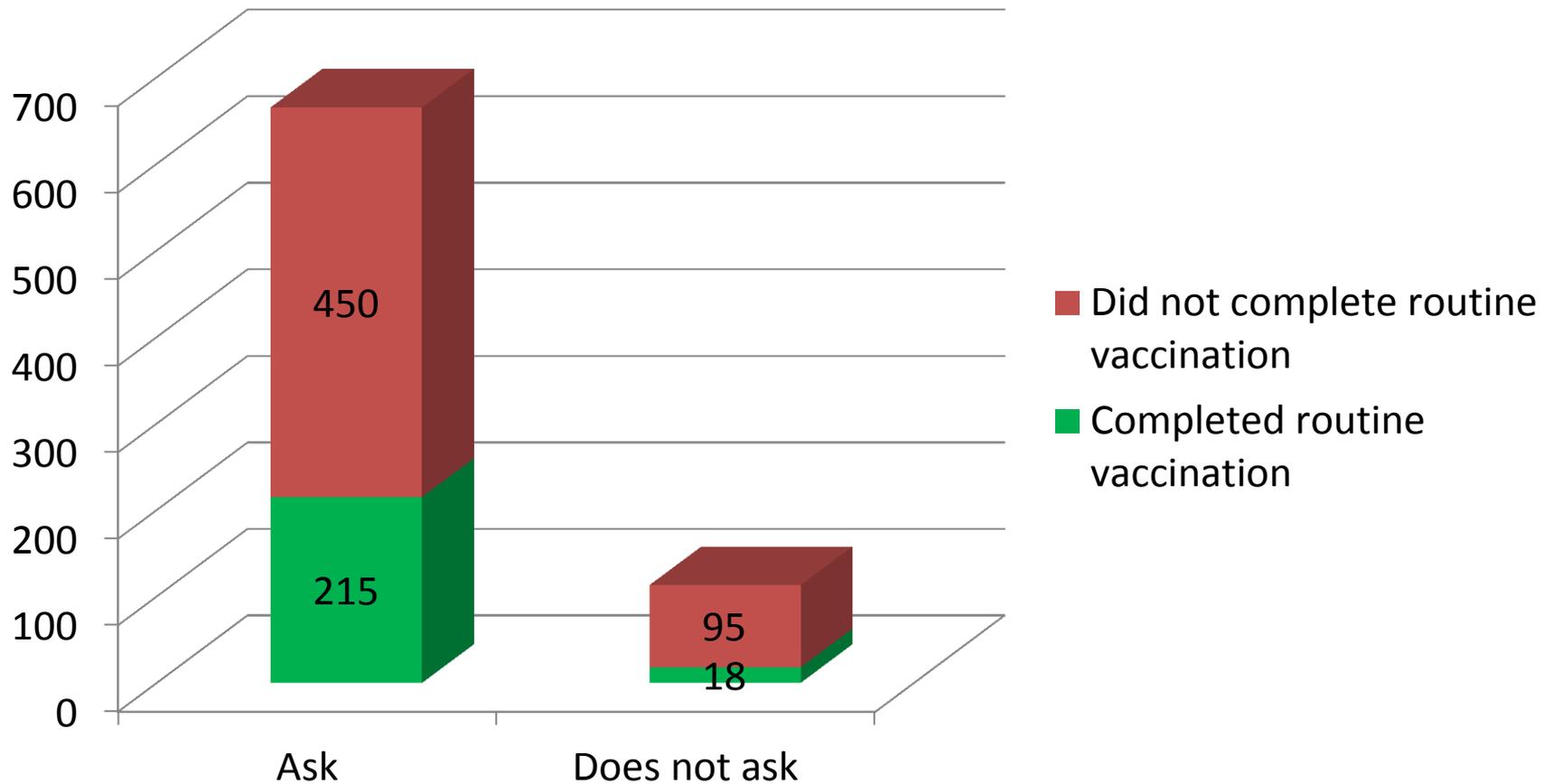


Figure 8: Parent's tendency to get vaccine recommended by doctor/nurse and children's complete vaccination (N=778)

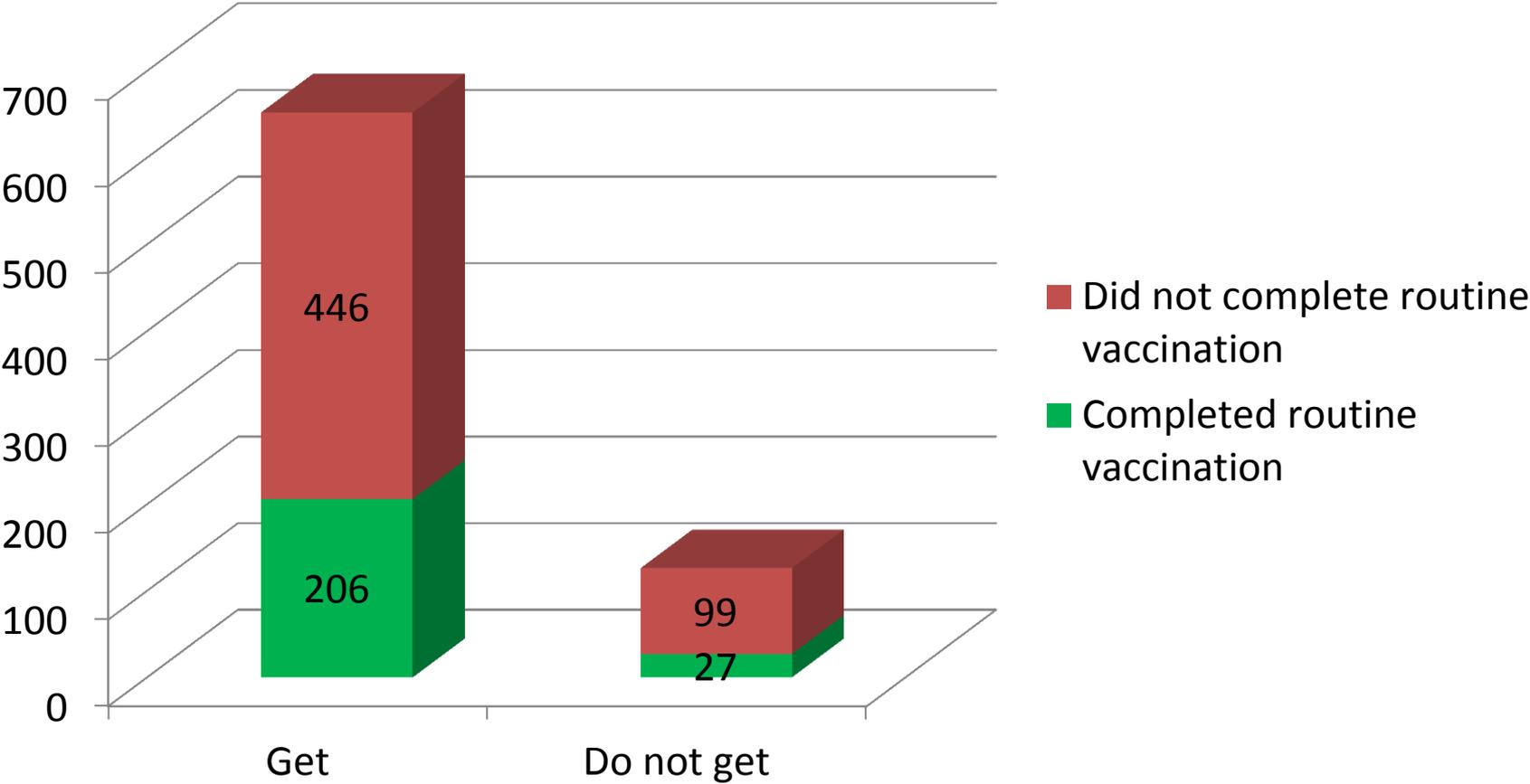


Figure 9: Parent getting children vaccinated with optional vaccines and children's complete vaccination (N=778)

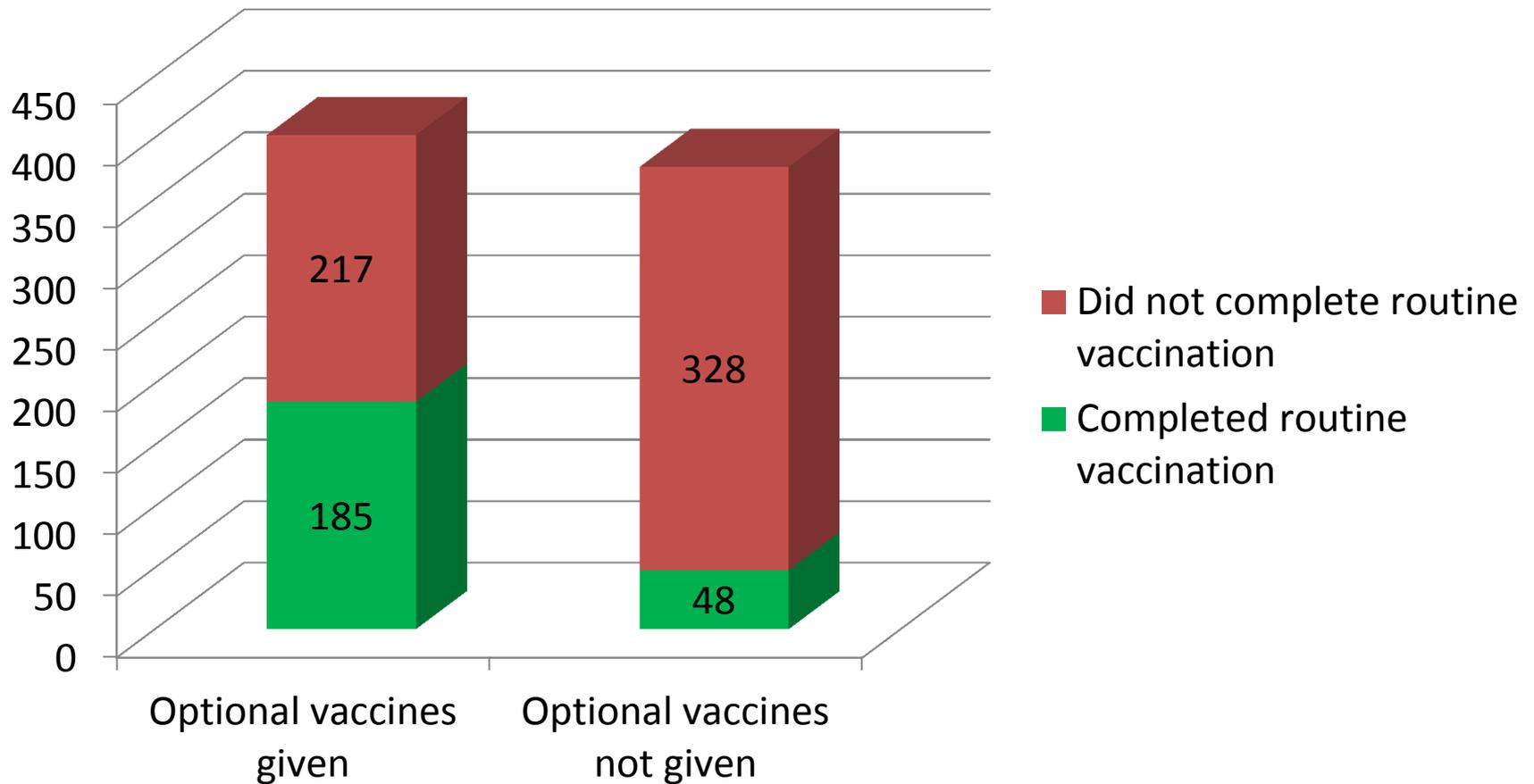


Figure 10: Parent taking sick child to MD/MBBS doctor and children's complete vaccination (N=778)

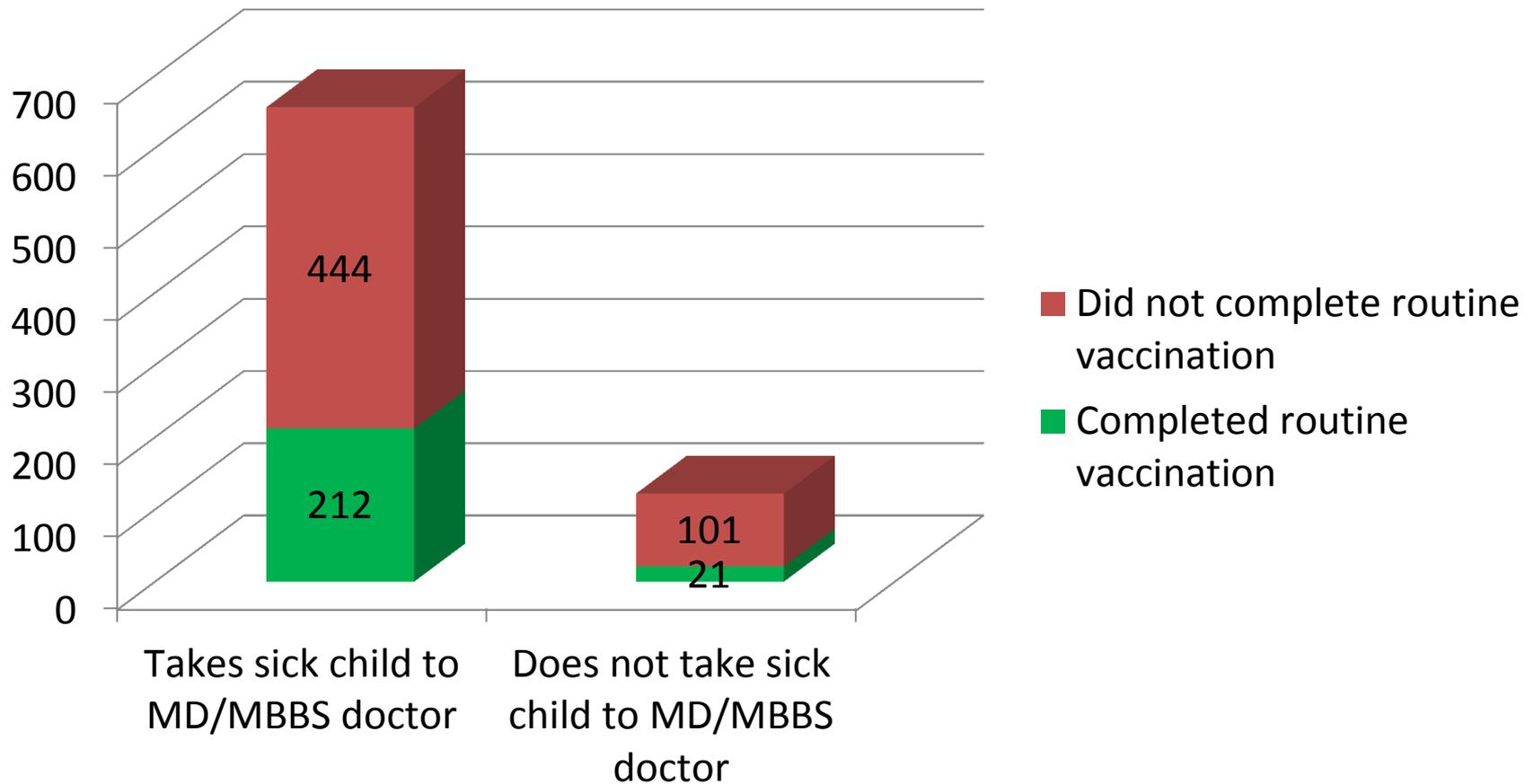


Figure 11: Parent's religion and children's complete vaccination (N=778)

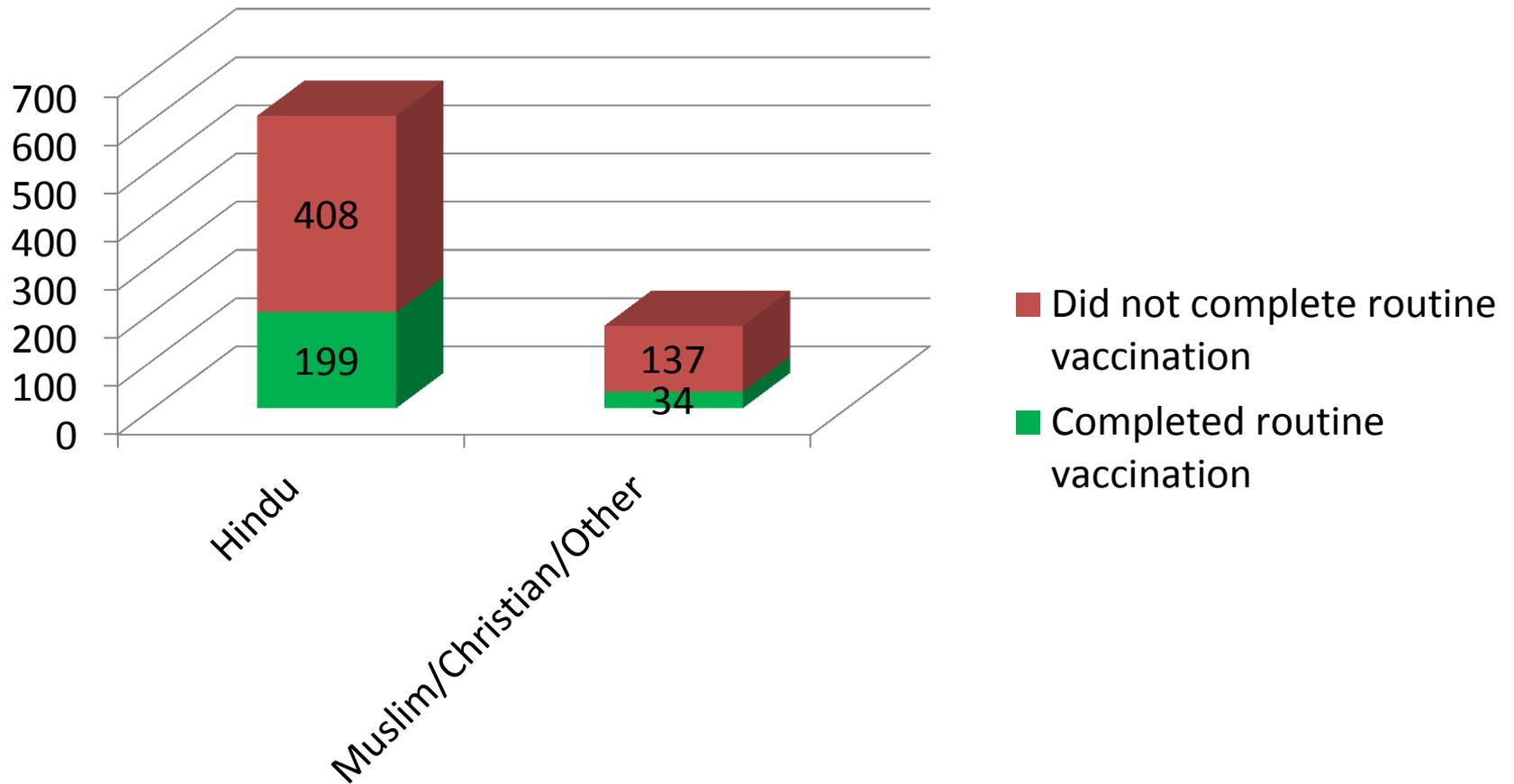


Table 1: Results of multivariable logistic regression

Items	Children completed routine vaccination (N=778)	
	Adjusted Odds Ratio ^a (OR)	95% Confidence Interval (CI)
Received any other optional vaccine <i>(Ref: Did not receive any optional vaccine)</i>	4.56	3.09-6.74
Ask about vaccination when visited a doctor/nurse <i>(Ref: Do not ask)</i>	2.07	1.10-3.90
Believe that vaccinations are effective in preventing disease <i>(Ref: Do not believe)</i>	2.50	1.19-5.28
Believe that getting the disease and natural protection is better than getting vaccinated <i>(Ref: Believe that vaccination is better)</i>	0.71	0.52-0.96

^a Only the variables statistically significant are shown here. In addition to these , other variables introduced in the multivariable model are: respondent’s age, education level, occupation, religion, whether seeks care from an MD/MBBS doctor when child is sick, fear about getting children vaccinated, knowledge about the place of vaccination and getting time off work.

Discussion

- Complete vaccination rate: less than the national averages.
- Higher educational attainment of parents: higher proportion of fully vaccinated children.
- Religion: Hindus more likely to vaccinate children than other religions.
- Belief in vaccines' effectiveness: more likely to have completely vaccinated children.
- Getting children vaccinated with optional vaccines: Higher likelihood of complete vaccination with routine vaccines
- Difficulty in taking time off work: barrier

Limitations

- Parents in this sample are older compared to parents usually surveyed for routine immunization studies: potential recall bias.
- Not controlled for birth order.
- School-based sample: limited representativeness
- Could not look at gender disparities.
- Parents had to reply “no” even if one child was not fully vaccinated: addressed by analyzing the subsample of parents with single children.

Strengths

- A large number of attitudinal factors considered.
- Socio-demographic variables: taken into account.
- Focuses on a setting which accounts for a majority of unimmunized children worldwide.
- Addresses parents with girl children: the more disadvantaged group.
- One of the first studies to examine parental attitudes regarding vaccination in India.

Conclusions

- Belief in vaccines effectiveness and administering optional vaccines are important facilitators.
- Belief that getting the disease is better is an important barrier.

Thank you!

Questions?