

Assessing healthcare provider competencies to diagnose and treat children under-5 years of age
with acute disease in Central Mozambique

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Abstract

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Background

It is often assumed that poor quality of medical care is due to a lack of knowledge and skills; however, evidence demonstrates that health care providers do not always apply the knowledge and skills that they know. Here we further explore this area, first by describing competencies of providers in diagnosing and managing children under-5 years of age with severe disease in central Mozambique, and second by examining how health facility and provider characteristics are associated with clinicians' performance.

Methods

We conduct a cross-sectional analysis of an annual longitudinal health facility survey as part of provider competencies were assessed through direct observation of patient interactions with 122 maternal and child health (MCH) nurses, and a further 416 clinical vignettes with health care

providers (including MCH nurses and mid-level clinical officers). Data were collected by experienced and trained health professionals using standardized instruments adapted from the national pediatric protocols for integrated management of childhood illnesses. To identify predictors associated with overall provider competence we performed a mixed-methods logistic regression with random intercepts for provider and variables (**Table 1**).

Results

Providers' theoretical application of national pediatric guidelines was high, with 93% and 100% of providers correctly identifying clinical danger sign in the two vignettes, respectively. Overall, application of clinical guidelines in patient encounters was low, with less than 20% of the providers assessing any of the danger signs. In the mixed-methods logistic regression, clinical and preventive technicians were associated with 39% fewer odds of correctly identifying any danger sign when comparing to MCH nurses.

Conclusions

While provider knowledge of clinical guidelines in identifying signs of illness and disease severity was found to be high, their application in the clinical setting was low. MCH nurses were more likely to correctly identify danger signs in children during directly observed clinical visits. Interventions to improve the quality of pediatric care should address not only observed knowledge differences among cadres, but importantly, the gap between health worker knowledge of clinical guidelines and their application. Further research is needed to identify drivers, beyond training, of clinical guideline adoption across health provider cadres.

Introduction

Significant attention to early childhood development (ages 0 – 6 years) is a global priority, as outlined in the Sustainable Development Goals (SDG)¹². Despite global progress in reducing under-5 mortality (U5MR)³, there were still 5.4 million deaths among children younger than 5 years of age in 2017, with most of deaths occurring in low-middle-income countries (LMIC)³. In Mozambique the U5MR has dropped substantially, but remains high with 73 deaths per 1000 live births by five years of age⁴. Encouragingly, primary health care utilization in Mozambique is high, with an estimated 93% of pregnant women utilizing antenatal care services (despite 55% have the recommended 4 + visits), 70% having a facility birth, and 83% of children aged 12-23 months receiving a third pentavalent vaccination⁵. More can be done to improve the quality of care and prevent these deaths, which includes the provision of competent providers, with a complete assessment, accurate diagnosis, treatment and counseling of a child with severe disease.

Evidence suggests that provision of clinical health services is hampered by shortages and maldistribution of the health workforce, in particular in low-and middle-income countries⁶. Mozambique's human resources for health coverage is estimated to be under one medical doctor and under five nurses and midwives per 10,000 inhabitants⁷, severely limiting the ability of the country to meet global under-five mortality targets¹. The Mozambique Ministry of Health (MOH) has published its Health Sector Strategic Plan (PESS – 2014 -2019) to increase and promote quality health care by improving and implementing clinical pediatric guidelines⁸.

Training and ensuring equitable distribution of competent health providers at health facilities (HF), coupled with implementing strategies to improve adherence to clinical guidelines, is a significant priority⁹. Studies have documented low levels of knowledge and even lower levels of adherence to clinical guidelines among providers in LMIC¹⁰. The Mozambican Service Delivery Indicator Survey conducted in 2014, suggests that crucial gaps in provider knowledge and ability exist with just 59% correctly diagnosing cases presented to them, 37% of providers adhering to clinical guidelines for the management of the childhood conditions, and 30% adhering to guidelines to prevent maternal and neonatal complications¹¹. The gap between providers' knowledge of clinical guidelines and their application have also been documented among health care workers in India and Tanzania^{12,13} highlighting the need to better understand why providers in LMIC incorrectly diagnose and manage sick children. Adherence to clinical guidelines is a complex process to measure. It can be influenced by contextual factors that may affect provider's ability and/or motivation to adhere to these guidelines¹⁴. Until now, few studies have been conducted to explore provider knowledge and application of clinical guidelines for severe pediatric disease management in Mozambique. This study assessed provider's competence for clinical pediatric care, including their knowledge of clinical guidelines and their application.

Objective

This study aims to 1) assess knowledge of pediatric clinical guidelines, 2) provider application of pediatric clinical guidelines, and 3) health facility and provider characteristics associated with application of pediatric clinical guidelines in central Mozambique.

Methods

Study design and sampling

This study employed a cross-sectional analysis of baseline survey data collected in 2017-2018 as part of an annual longitudinal health facility survey that is a key data source for the evaluation of the Integrated District Evidence to Action program (IDEAs) to Improve Maternal, Newborn and Child Health¹⁵. A total of 36 health facilities providing primary care services were sampled from a total of 24 districts in Manica, Sofala, Tete and Zambézia provinces. The largest health facility (measured as the total number of first antenatal care visits in the year prior to the study) was selected for inclusion in the health facility survey. An additional two facilities from each district were then selected randomly from all the remaining facilities providing primary care services). As such, the 72 clinics included in the survey were equally distributed across the 24 districts. Within each facility, MCH nurses and mid-level clinical officers providing clinical maternal and child health services were eligible and approached for the provider assessment and clinic observation. The selection of children (and their caretakers) for whom clinical visits were observed was by convenience, without a specific recruitment or enrolment criteria.

Instruments

To assess knowledge, vignettes were developed based on the WHO - Integrated Management of Childhood Illness (IMCI)¹⁶ and the national standardized protocols Vignette 1 describe a scenario of a child with clinical danger signs (inability to drink, abnormally fatigued, convulsions, repeated vomiting). Vignette 2 describes an infant presenting signs of illness (fever, diarrhea, convulsions, lethargy, chest wall retraction, stridor, tender swelling around the belly button, nose wing, sunken eyes). Both vignettes included different diagnoses and treatment options to match with the vignette.

Data collection procedures

The data used in this study were collected between August 2017 and March 2018¹⁵. To assess adherence to clinical protocols, outpatient pediatric visits were observed over a one to two-day period by a gold standard MCH nurse. Checklists were used to document provider's clinical conduct during the consultation at well-child and at-risk child visits, neonatal consultations and emergency treatment. For the purpose of this study we include the well-child and at-risk visit observations, focusing on adherence to diagnostic assessment and identification of danger signs.

Study data were collected and managed using the Research Electronic Data Capture (REDCap) hosted at the Institute of Translational Health Sciences. REDCap is a secure, web-based application designed to support data capture for research studies¹⁷. Each provider was assigned a unique ID to enable linking across the repeated health facility survey.

Describing health facility and provider characteristics

Health providers socio-demographics characteristics were included in the surveys, as were questions relative to their participation in recent trainings, years since graduation, professional cadre, habitual hours of clinical practice per week, and location of the health facility (rural or urban).

Knowledge Assessment

Trained data collectors administered the two vignettes to clinical providers through face-to-face interviews where data collectors read each case and then followed the checklist to document providers' decisions on the case condition and management. Data were collected using the REDCap electronic data collection system¹⁷.

Application of clinical guidelines assessment

To assess implementation of clinical guidelines, a checklist adapted from the standardized WHO IMCI clinical assessment checklist was followed to document whether providers' implemented national guidelines¹⁶. While providers were observed in outpatient pediatric consultations in both well-child and sick child consultations, for the purpose of this study we focused on diagnosis procedures during sick child consultations (does not drink, vomiting, convulsions and lethargy). The data collectors did not play any role in the consultation process and did not interfere in diagnosis or treatment procedures.

Outcomes

The two main outcomes for the analysis were: 1) Correct identification of danger signs among hypothetical pediatric patients (using vignettes), and 2) correct application of clinical guidelines (directly observed by study personnel). The assessment of the dependent variables in our study was based on a set of selected indicators (danger and illness signs), built and adapted from the WHO priority indicators for IMCI¹⁶. To be adherent, the provider had to correctly assess for any of the five danger sign in the IMCI checklist.

Independent variables

We considered the following predictors in the analysis: provider age and gender, any clinical training in the six months prior to the survey, years since graduation, professional cadre, having worked extra-time, and health facility urbanicity (**Table 1**).

Data management and analysis

REDCap¹⁷ was used for data entry and R software 4.1.0¹⁸ was used to perform the statistical analysis. Descriptive analysis (frequencies, means, standard deviations and quartiles) was performed. To perform the association analysis, the original dataset was reshaped from the wide format (i.e. 1 observation per provider but with multiple variables for the responses) to a long format (i.e. multiple lines per provider, one column to identify the response variable (as categorical) and a dummy indicator to the kind of response). In this dataset, mixed-effects logistic regression models used to explore the association of provider's adherence and predictors following the equation:

$$\log\left(\frac{p_{pi}}{1 - p_{pi}}\right) = (\beta_0 + b_p + b_i) + \beta_1 \cdot Factor_1 + \dots + \beta_n \cdot Factor_n$$

where p_{pi} is the proportion of the correct response of a provider p on item i . The terms $Factor_1$ to $Factor_n$ are predictors of interest. The Greek letters (betas) are the fixed effects parameters in the model. Particularly the β_0 indicates the overall average log-odds of all items. Each of the following betas express the change in the overall log-odds associated to one particular factor. The random effects b_i conceptually represents a particular easiness to correctly respond an item i , and b_p a latent provider p ability or propensity to respond. This model is a re-parameterization of the Rash model to leverage the use of a general mixed effects software such as the lme4¹⁹²⁰²¹ library in R. We

performed unadjusted and adjusted analysis. We report the exponentiated beta coefficients as odds-ratios. We also reported 95% confidence intervals of the estimates. A p-value of less than 0.05 was used considered statistically significant.

Ethical Approval

Study procedures received ethical approvals from the Institutional Review Boards of the Ministry of Health in Mozambique and at the University of Washington. All study participants provided informed consent prior to data collection.

Results

A total of 550 health care providers participated in the health facility survey. From these, 134 (24.4%) were excluded in the analysis on knowledge of clinical guidelines due to lack of recorded data in the vignettes forms or they were not assessed. Analysis of data on direct observation of clinical encounters was conducted among a sample of 122 MCH.

Provider Characteristics

Table 2 describes provider by study province. The majority (69.6%) of providers were female. The median age of the providers was 30 years (27.0 – 35.0), and 31.1% had graduated within 2 years prior to the interview/observation. 38.5% of study participants reported attending at least one in-service training in the past 6 months and 22.7% reported working overtime in the last week. The majority (50.0%) of the providers were MCH nurses and most (75.6%) worked at rural health facilities.

Knowledge of pediatric guidelines

A total of 416 providers were assessed for knowledge of the five danger signs in the vignettes. The percentage of provider correctly identifying each of the danger and illness signs are displayed in the **Table 3**. Overall, 92.5% and 100% correctly identified any danger sign in the vignette 1 and illness sign in the vignette 2. Screening for severity of illness (vignette one) included assessment for lethargy (82.9%), convulsion (90.4%), lethargy or unconsciousness (82.9%), ability to drink (83.4%) and vomiting (86.1%). Also, 67.1% identified other signs not included in the response options (**Table 2**). Assessment for diarrhea and subcostal retraction in the vignette two (signs of illness) was above 75.0%, but less than 70.0% were assessed for fever, lethargy, fast breathing and stridor/wheezing.

Application of clinical guidelines

A total of 122 MCH nurses, providing clinical care to 516 children in at-risk consults, were directly observed. Overall, assessment of danger signs was low, with 18.2% of children being assessed for their ability to drink, 8.9% for vomiting, and 6.4% for recent convulsions (**table 4**).

Health facility and provider characteristics associated with knowledge of clinical guidelines

Tables 5 present the results from the mixed-effects logistic regression to assess the association between knowledge of clinical guidelines with provider and facility characteristics. After adjusting for covariates, professional cadre (both preventive and clinician officers) were found to have significantly lower odds to correctly identify danger signs in the vignette-based assessment compared with MCH nurses (OR = 0.39; 95%CI=0.18-0.84 for preventive technicians; OR = 0.39;

95%CI=0.17-0.93 for clinical officers). **Figure 1** portrays the propensity for correct responses in the vignette-based assessment across cadres of health providers.

Health facility and provider characteristics associated with application of clinical guidelines

Tables 6 present the results from the mixed-effects logistic regression to assess the association between application of clinical guidelines with provider and facility characteristics. After adjusting for covariates, there were no significant associations between assessed facility and provider-level characteristics included in the model and odds of correctly applying clinical guidelines. **Figure 2** portrays the propensity for checking vital signs during direct observation across the cadres of health providers.

Discussion

In this study we aimed to assess provider competencies to manage pediatric illness using two process quality indicators (the knowledge and adherence to clinical guidelines) adapted from the WHO IMCI assessment tools¹¹, and to identify characteristics associated with adherence to IMCI¹⁶ and national pediatric clinical protocols.

High level of knowledge of clinical guidelines

On average, we found that providers working in public sector health facilities in central Mozambique had a high level of knowledge of clinical guidelines, with more than 90% correctly identifying any sign of severe disease in the two vignettes. This finding is contrary to other studies²² in LMICs, in which guideline knowledge was considerably lower (less than 60%)²²⁻²⁵. A previous survey in Mozambique found that provider knowledge and ability to correctly diagnose (measured with clinical vignettes) was weak, with 58% of the five disease conditions being correctly diagnosed by health providers¹¹. This high proportion of knowledge found in our study may be attributable to only including one domain in the vignette (correct identification of danger or illness signs) and excluded diagnosing and treatment.

Low application of clinical guidelines

Though this analysis only included MCH nurses, correct application of clinical guidelines in our study are consistent with what has been reported in similar settings^{26,27}. The low level of correct application of clinical guidelines may be due to the focus on solutions that aim to increase the numbers of providers, rather than putting in place strategies to reinforce guideline application in practice²⁸. Integrated management of childhood illness are considered important, especially in LMICs, by guiding providers on case detection using simple clinical signs and allowing empirical treatment based on action oriented classification rather than the exact diagnosis²⁹. Correctly identifying signs of severe illness in children is crucial to expediently treating or referring patients, especially in rural facilities. A study in Kenya, showed that the pediatric mortality risk for patients with at least one danger sign was 6.5 times higher than for those without any danger signs³⁰.

Characteristics associated with adherence

Professional cadre

Our results showed that MCH nurses presented superior knowledge of guidelines to diagnose sick child compared with other clinical cadres. However, in practice (under direct observation), appropriate application of clinical guidelines was low among MCH nurses. This study highlights

that other health cadres (preventive and clinical officers), demonstrated significantly lower adherence to clinical guidelines and norms. Despite all cadres showing high levels of knowledge in the child care vignettes, and lower adherence in practice, it also indicates that pre-service clinical training of the providers alone does not necessarily translate into better adherence to clinical guidelines and norms, and reinforces similar findings from a multi-country study for sick child management³¹. Therefore, given that the majority of child care consultation in health centers of Mozambique is performed by MCH nurses, we decided to include in our direct observation analysis of clinical encounters only this cadre.

Work in urban or rural health facilities

Providers working in urban health facilities were found to be significantly less likely compared with providers in rural facilities to adhere to clinical guidelines when directly observed. This finding may indicate that urban health facilities have high volume of patients, which may potentially compromise service quality. The data for Mozambique suggests that a large share of health providers, across all facility sizes, had very high caseload levels, with an average of 17.4 patients per provider per day¹¹. This finding may support policymakers, particularly those in the Ministry of Health, who are considering task shifting from MCH nurses to other health cadres in sick child care wards, to maximize both quality and efficiency of pediatric care in health facilities. This is especially relevant in the context of LMICs, where human resources shortages still hinder service delivery enormously.

Based on the findings of our study and relevant literature, low adherence to clinical guidelines by frontline health workers may be an important barrier to achieve the goal of substantially decreasing child mortality in Mozambique. A meta-analysis, based on IMCI studies from Tanzania, India and Bangladesh, revealed that improvements in clinical care that was anticipated to lead to a 50% reduction in under-five mortality in practice only reduced mortality by 15%^{16,32,33}. Other factors may include poor availability of priority drugs and minimum infrastructure, with facilities found to have 43% of essential drugs and only 34% meeting the minimum infrastructure requirements in Mozambique¹¹.

The literature suggests that health providers' knowledge and application of clinical competencies is an intricate and complex relationship, and the implementation of evidence-based practices³⁴ alongside the health facilities factors should be aligned to support carrying out guideline-based health care. Hence, improving the competence of health providers in performing and ensuring quality care should focus on task sharing and accountability among all professional cadres in a health facility, *vis-à-vis* improving working conditions to allow them to better manage a sick child.

Limitations and strengths

The findings in this study should be cautiously interpreted as the study assessed provider competence (knowledge of guidelines), using clinical vignettes to explore what one should do in an expected situation, and not actually performed in practice³⁵. Clinical vignettes can be considered an easy alternative when compared to other techniques to measure clinician's knowledge or where chart abstraction is not feasible due to poor chart documentation of childhood illness management³⁶. Although direct observation is an intensive way to measure the activities of a health worker, it is also likely that providers alter their behavior while being assessed, so their quality of care is most likely to be higher or lower in the presence of the observer³⁷. We did not include in our analyses other health system factors such as mentored supervision and the use of educational

tools that could have also influenced the level of competence among health workers^{38,39}. Rates of adherence to check for any of the five danger signs in childhood illness were particularly low. This may be partly due to the presence of the study team affecting provider performance either by making them nervous or by motivating them to act better than usual. However, a study in Benin, has found the Hawthorne effect to have limited influence on provider practices during consultations with sick children⁴⁰. Therefore, we do not expect this bias to have contributed much on the overall direction of the association.

The strengths of this analysis include the large facility sample, representativeness of the health facility types which included both smaller and medium-sized health centers and district hospitals, and a large and diverse sample of providers and clinical interactions⁴¹. The surveys were designed utilizing a standardized data collection tool which was comparable and aligned to IMCI national algorithms. Participants were representative of different cadres for comparison and all working directly or partially in the child outpatient care.

Conclusion

Our findings demonstrate that health providers who serve under-five year pediatric patients in central Mozambique have high levels of knowledge of the pediatric care guidelines. However, a significant know-do gap between provider knowledge and action was uncovered through our analysis. Our findings suggest that approaches to improve provider capabilities must address both knowledge as well as drivers of provider performance. Although evidence-based clinical guidelines exist in Mozambique to more efficiently and effectively identify acute health conditions in children under-five years, further efforts to understand the barriers to improved healthcare provider adherence to clinical guidelines are needed. Specific areas to explore may include leveraging mentorship programs and other supervision efforts to improve provider's performance.

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Appendix – Tables and Figures

Table 1: Independent variables

Variables	
1	Age Age of provider
2	Sex Sex of provider (Male or Female)
3	Had training in the last 6 months Yes or No
4	Years since graduation
5	Professional cadre 1. Preventive Health Officer 2. MCH Nurse 3. Clinical Technician 4. Other
6	Worked extra-time Yes or No
7	Health facility location Rural or Urban

Table 2. Baseline characteristics of child providers, central Mozambique, (N = 550).

Characteristic	Tete		Manica		Zambezia		Sofala		Total	
	N	%	N	%	N	%	N	%	N	%
Total	156	100.0	153	100.0	90	100.0	151	100.0	550	100.0
Gender										
Female	99	63.5	102	66.7	70	77.8	112	74.2	383	69.6
Male	42	26.9	34	22.2	14	15.6	30	19.9	120	21.8
Age										
Mean (SD*)	31.0 (6.9)		31.8 (7.6)		34.6 (8.4)		31.4 (7.2)		32.0 (7.5)	
Median (IQR**)	29.0 (26.0 - 34.5)		30.0 (26.0 - 35.0)		33.0 (29.0 - 39.8)		29.0 (27.0 - 34.0)		30.0 (27.0 - 35.0)	
20 - 29	78	50.0	66	43.1	26	28.9	77	51.0	247	44.9
30 - 39	52	33.3	57	37.3	41	45.6	57	37.7	207	37.6
40 - 59	22	14.1	16	10.5	16	17.8	7	4.6	61	11.1
60 - +	3	1.9	6	3.9	7	7.8	7	4.6	23	4.2
In-service training in the last 6 months	57	36.5	65	42.5	33	36.7	57	37.7	212	38.5
Years since graduation										
Less than 2 years	60	38.5	46	30.1	22	24.4	43	28.5	171	31.1
Between 2 to 5	46	29.5	42	27.5	29	32.2	45	29.8	162	29.5
Between 5 and 10	13	8.3	18	11.8	15	16.7	24	15.9	70	12.7
More than 10	2	1.3	9	5.9	6	6.7	12	7.9	29	5.3
Professional cadre										
Preventive Technician	25	16.0	32	20.9	16	17.8	28	18.5	101	18.4
MCH Nurse	82	52.6	68	44.4	46	51.1	79	52.3	275	50.0
Clinician Technician	22	14.1	18	11.8	15	16.7	12	7.9	67	12.2
Other***	27	17.3	35	22.9	13	14.4	32	21.2	107	19.5
Worked overtime last week	24	15.4	33	21.6	16	17.8	52	34.4	125	22.7

*SD: Standard Deviation

**IQR: Interquartile range

***Other signs not included in the response options.

Table 3. Percentage of providers who correctly identified any danger or illness sign in the vignettes

Characteristic	Total	
	N	%
Total	416	
Assessed for danger signs vignette	416	100.0
Identified correctly any danger sign	385	92.5
Ability to drink	347	83.4
Vomiting	358	86.1
Lethargy	345	82.9
Convulsion	376	90.4
Other danger signs*	279	67.1
Assessed for illness signs vignette	415	99.8
Identified any illness sign	415	100.0
Fever	274	66.0
Diarrhea	362	87.2
Convulsions	333	80.2
Lethargy	172	41.4
Subcostal retraction	320	77.1
Nose wing	262	63.1
Stridor/wheezing	215	51.8
Belly button	311	74.9
Sunken eyes	296	71.3
Other*	135	32.5

*Other signs not included in the checklist

Table 4. Percentage of providers who correctly checked any danger or illness sign in the direct observation

Characteristic	Total	
	N	%
Total	122	100.0
Providers assessed for direct observation (danger signs)	122	100.0
Total children for direct observation	516	
Average children observed per provider	4.2	
Did the provider check		
Does not drink	94	18.2
Vomiting	46	8.9
Had convulsion	33	6.4
Has convulsion now	45	8.7
Lethargy or unconscious	59	11.4

Table 5. Odds Ratios of correctly responding to danger signs in the vignettes.

Characteristic	Unadjusted OR (95%CI)	Adjusted OR (95%CI)
N providers		342
N observation		1368
Gender		
Female	1	1
Male	0.66 [0.38 - 1.15]	1.00 [0.52 - 1.94]
Age		
20 - 29	1	1
30 - 39	1.30 [0.74 - 2.29]	1.27 [0.70 - 2.30]
40 - 59	2.16 [0.84 - 5.59]	1.63 [0.56 - 4.75]
60 - +	0.57 [0.15 - 2.08]	0.49 [0.09 - 2.73]
In-service training in the last 6 months	1.46 [0.85 - 2.51]	1.33 [0.77 - 2.31]
Years since graduation		
Less than 2 years	1	1
Between 2 to 5	1.56 [0.81 - 2.99]	1.37 [0.72 - 2.60]
Between 5 and 10	0.76 [0.34 - 1.67]	0.67 [0.30 - 1.50]
More than 10	0.83 [0.26 - 2.64]	1.20 [0.26 - 5.59]
Professional cadre		
Preventive Technician	0.39 [0.20 - 0.77]	0.39 [0.18 - 0.84]
MCH Nurse	1	1
Clinician Technician	0.39 [0.18 - 0.84]	0.39 [0.17 - 0.93]
Other	0.51 [0.25 - 1.02]	0.47 [0.20 - 1.07]
Worked overtime last week	0.69 [0.40 - 1.20]	0.83 [0.45 - 1.51]
Urban health facility	1.58 [0.81 - 3.08]	1.59 [0.75 - 3.37]

Table 6. Odds Ratio of checking danger signs in the direct observation

Characteristic	Unadjusted OR (95%CI)	Adjusted OR (95%CI)
Age		
20 - 29	1	1
30 - 39	0.82 [0.19 - 3.51]	0.61 [0.14 - 2.75]
40 - 59	1.01 [0.12 - 8.77]	1.28 [0.15 - 11.10]
60 - +	5.13 [0.28 - 95.70]	14.70 [0.37 - 589.00]
In-service training in the last 6 months	0.18 [0.05 - 0.69]	0.29 [0.07 - 1.17]
Years since graduation		
Less than 2 years	1	1
Between 2 to 5	3.35 [0.67 - 16.70]	1.67 [0.32 - 8.61]
Between 5 and 10	6.87 [0.76 - 62.20]	4.69 [0.39 - 56.10]
More than 10	3.28 [0.25 - 43.60]	0.56 [0.02 - 14.50]
Worked overtime last week	2.18 [0.51 - 9.30]	1.45 [0.32 - 6.56]
Urban health facility	0.54 [0.12 - 2.52]	0.69 [0.12 - 3.87]

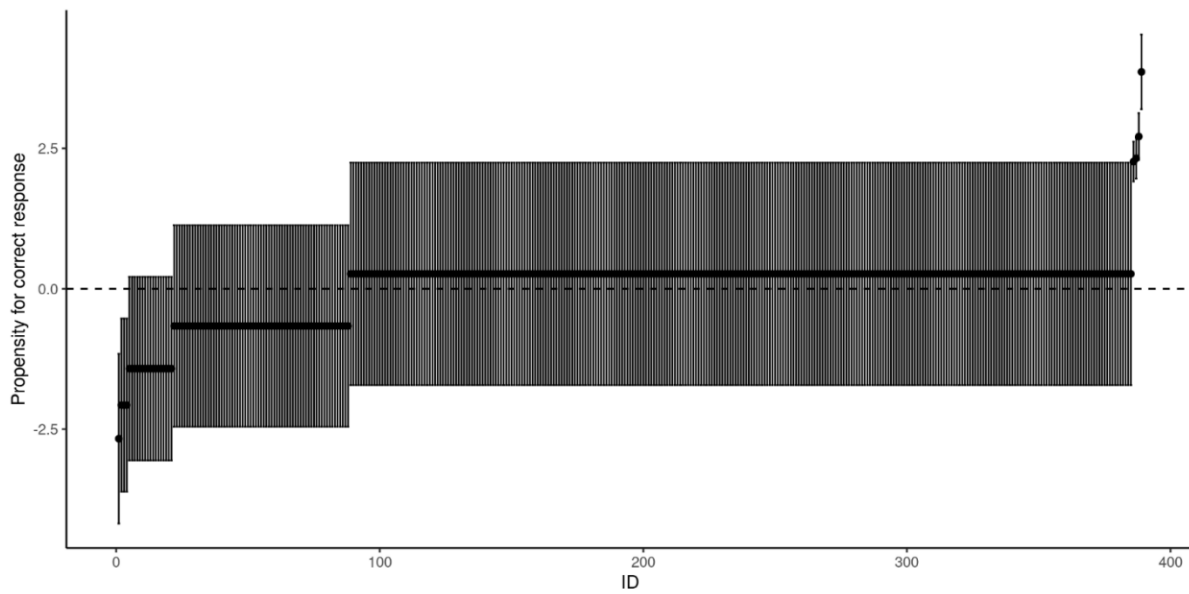


Figure 1
Propensity for correct response in the vignettes.

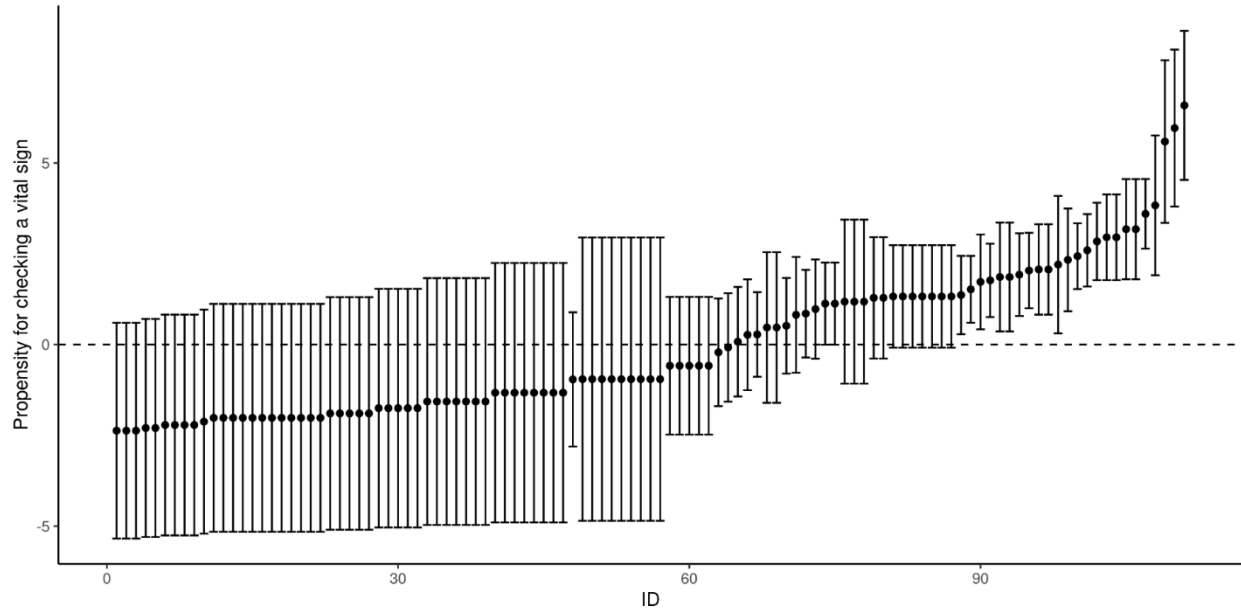


Figure 2
Propensity for checking a danger sign.