VACCINE DELIVERY RESEARCH DIGEST

UNIVERSITY OF WASHINGTON STRATEGIC ANALYSIS, RESEARCH & TRAINING (START) CENTER

REPORT TO THE BILL & MELINDA GATES FOUNDATION

PRODUCED BY: ARAKAKI L, BABIGUMIRA JB

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1. EPI immunization coverage, timeliness and dropout rate among children in a West Cameroon health district: a cross sectional study.

Ateudjieu J, Yakum M, Goura A, Tembei A, Ingrid D, Bita'a Landry B, et al.

BMC Public Health. 2020 Feb 21;20(1):228.
PubMed ID: 32054484

ABSTRACT

BACKGROUND: Monitoring of the expanded program on immunization's performance is not only limited to routine periodic reports but equally includes surveys. Based on unpublished national EPI surveillance data from the past 5 years in Cameroon, the Foumban health district has reported a high number of vaccine preventable disease suspected cases. Contradictory information on the immunization coverage in this district exists from both administrative data and published literature. As a result, the objective of this study was to estimate the immunization coverage and dropout rate in age group 12-23 months and timeliness in age group 0-59 months among children in Foumban Health District (Cameroon), in 2018.

METHOD: This was a descriptive cross-sectional study targeting randomly selected children aged 0-59 months from Foumban health district. Data were collected by trained and supervised surveyors using a pretested questionnaire to describe the immunization coverage, timeliness and dropout rate in eighty clusters of about thirty buildings selected by stratified random sampling in July 2018.

RESULTS: In total, 80 clusters covering 2121 buildings were selected and all were reached (100%). A total of 1549 (81.2%) households accepted to participate in the survey and 1430 children aged 0-59 months including 294 (20.6%) aged 12-23 months were enrolled into the study. Of these 1430 children, 427 [29.9 (27.4-32.2)%] aged 0-59 months were vaccinated with evidence. In the age group 12-23 months, the immunization coverage with evidence of BCG, DPT-Hi + Hb 3 and measles/rubella were 28.6(23.4-33.9)%, 22.8 (18.1-27.6)% and 14.3 (10.3-18.1)% respectively. Within age group 0-59 months; the proportion of children who missed their vaccination appointments increased from 23.3 to 31.7% for the vaccine planned at birth (BCG) and last vaccine planned (Measles/Rubella) for the EPI program respectively. In age group 12-23 months; the specific (DPT-

Hi + Hb1-3) and general (BCG-Measles/Rubella) dropout rates of vaccination with evidence were 14.1 and 50.0% respectively.

CONCLUSION: Documented immunization coverage, dropout rate and timeliness in Foumban Health district are lower than that targeted by the Cameroon EPI. Competent health authorities have to take necessary actions to ensure the implementation of national guidelines with regards to children access to immunization. Also, studies have to be conducted to identify determinants of low immunization coverage and delays in immunization schedules as well as high dropout rates.

WEB: 10.1186/s12889-020-8340-6
IMPACT FACTOR: 2.567
CITED HALF-LIFE: 5.5

START COMMENTARY

Ateudjieu et al. conducted a cross-sectional survey of children under the age of 5 years to assess expanded program on immunization (EPI) vaccination coverage, timeliness, and dropout in Foumban Health District in Cameroon, a district with reported high numbers of vaccine-preventable cases. Table 2 summarizes vaccination by age group and antigen. Table 3 summarizes timeliness of vaccination. Authors found immunization coverage, timeliness, and dropout at levels lower than EPI targets. To limit selection bias, authors used Global Positioning Systems for probability sampling and stratified random sampling of buildings within clusters. They also pretested the survey questionnaire and trained surveyors to reduce information and response bias. A potential limitation of this study was the use of immunization cards to assess vaccination status. The absence of an immunization card does not necessarily represent an unimmunized child. It is possible that an immunized child lost their immunization card or was not given an immunization card due to stock-outs. Authors seek to investigate tracking immunization status of children without immunization cards to obtain better estimates of vaccination coverage, timeliness and dropout.

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2. Operability, Acceptability, and Usefulness of a Mobile App to Track Routine Immunization Performance in Rural Pakistan: Interview Study Among Vaccinators and Key Informants.

Zaidi S, Shaikh S, Sayani S, Kazi A, Khoja A, Hussain S, et al.

JMIR Mhealth Uhealth. 2020 Feb 19;8(2):e16081.
PubMed ID: 32053115

ABSTRACT

BACKGROUND: There has been a recent spate of mobile health (mHealth) app use for immunizations and other public health concerns in low- and middle-income countries. However, recent evidence has largely focused on app development or before-and-after effects on awareness or service coverage. There is little evidence on the factors that facilitate adoption of mHealth programs, which is critical to effectively embed digital technology into mainstream health systems.

OBJECTIVE: This study aimed to provide the qualitative experiences of frontline health staff and district managers while engaging with real-time digital technology to improve the coverage of routine childhood immunization in an underserved rural district in Pakistan.

METHODS: An Android-based app was iteratively developed and used for a 2-year period in 11 union councils of the Tando Muhammad Khan district, an underserved rural district with poor immunization coverage in Pakistan. We used iterative methods to examine the (1) acceptability and operability of the app, (2) validity of the collected data, and (3) use of the collected data. In addition, we collected the barriers and enablers for uptake of the mHealth app. Each of these topics was further explored related to changes in work as well as the enabling factors for and barriers to app use. In-depth interviews were conducted with the 26 vaccinators posted in the 11 union councils and 7 purposively selected key informants (government district managers) involved with the Expanded Program for Immunization. Findings were triangulated in line with the three broad research areas.

RESULTS: Digital immunization tracking was considered acceptable by vaccinators and district managers. Real-time immunization data were used to monitor vaccination volume, track children with incomplete vaccinations, develop outreach visit plans, correct existing microplans, and disburse a fuel allowance for outreach sessions. The validity of the app data was perceived to be superior to that of data from manual records. Ease of operability, satisfaction with data, personal recognition, links to field support, and a sense of empowerment served as powerful enablers. Taking twice the time to complete both manual and digital entries and outdated phones over time were considered

constraints. An unintended knock-on effect was improved coordination and strengthening of Expanded Program for Immunization review platforms across district stakeholders through digitalized data.

CONCLUSIONS: Embedding digital technology into mainstream health systems relies on use by both end users and district stakeholders. Ease of operability, satisfaction with data reliability, personal recognition, links to field support, and empowerment are powerful enablers, whereas improved coordination as a result of easy, transparent data access can be an important by-product of digitalization. Findings are relevant not only for wide-scale implementation of immunization tracking apps in Pakistan but also for informing the use of digital technology for results-based delivery by frontline health workers.

WEB: 10.2196/16081
IMPACT FACTOR: 4.301
CITED HALF-LIFE: n/a

START COMMENTARY

Zaidi et al. conducted a qualitative study of the use of mHealth to improve expanded immunization program activities in rural Pakistan. The moble app, Teeko, allowed for data collection and real-time vaccinator tracking. The app also allowed for communication and coordination between vaccinators, health workers, supervisors, and managers. Respondents found storing data offline useful, preventing loss of data due to poor internet connectivity. The qualitative nature of the study helped authors identify key themes about the implementation of the mobile app. Refer to Textboxes 1 and 2 for a summary of key findings. The study, however, is limited in its inability to establish a causal relationship between the intervention and vaccination coverage outcomes.

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3. Health system factors influencing uptake of Human Papilloma Virus (HPV) vaccine among adolescent girls 9-15 years in Mbale District, Uganda.

Nabirye J, Okwi L, Nuwematsiko R, Kiwanuka G, Muneza F, Kamya C, et al.

BMC Public Health. 2020 Mar 09;20(1):171.
PubMed ID: 32019543

ABSTRACT

BACKGROUND: Globally, cervical cancer is the fourth most common cancer in women with more than 85% of the burden in developing countries. In Uganda, cervical cancer has shown an increase of 1.8% per annum over the last 20 years. The availability of the Human Papillomavirus (HPV) vaccine presents an opportunity to prevent cervical cancer. Understanding how the health system influences uptake of the vaccine is critical to improve it. This study aimed to assess how the health systems is influencing uptake of HPV vaccine so as to inform policy for vaccine implementation and uptake in Mbale district, Eastern Uganda.

METHODS: We conducted a cross sectional study of 407 respondents, selected from 56 villages. Six key informant interviews were conducted with District Health Officials involved in implementation of the HPV vaccine. Quantitative data was analyzed using Stata V.13. Prevalence ratios with their confidence intervals were reported. Qualitative data was audio recorded, transcribed verbatim and analyzed using MAXQDA V.12, using the six steps of thematic analysis developed by Braun and Clarke.

RESULTS: Fifty six (14%) of 407 adolescents self-reported vaccine uptake. 182 (52.3%) of 348 reported lack of awareness about the HPV vaccine as the major reason for not having received it. Receiving vaccines from outreach clinics ($p = 0.02$), having many options from which to receive the vaccine ($p = 0.02$), getting an explanation on possible side-effects ($p = 0.024$), and receiving the vaccine alongside other services ($p = 0.024$) were positively associated with uptake. Key informants reported inconsistency in vaccine supply, inadequate training on HPV vaccine, and the lack of a clear target for HPV vaccine coverage as the factors that contribute to low uptake.

CONCLUSION: We recommend training of health workers to provide adequate information on HPV vaccine, raising awareness of the vaccine in markets, schools, and radio talk shows, and communicating the target to health workers. Uptake of the HPV vaccine was lower than the Ministry of Health target of 80%. We recommend training of health workers to clearly provide adequate

information on HPV vaccine, increasing awareness about the vaccine to the adolescents and increasing access for girls in and out of school.

WEB: 10.1186/s12889-020-8302-z
IMPACT FACTOR: 2.567
CITED HALF-LIFE: 5.5

START COMMENTARY

In this cross-sectional study of human papillomavirus (HPV) vaccine uptake among female adolescents aged 9–15 years in Mbale, Uganda, Nabirye et al. found low uptake and awareness of the HPV vaccine. Independent variables for the multivariable model were selected based on their p-value in bivariate analyses and backward elimination approach (see Table 4 for multivariable model results). The cross-sectional nature of the study limits causal inference between the factors identified and HPV vaccine uptake. However, the mixed methods provided greater insight to key factors that influence HPV vaccine implementation and uptake. Specifically, authors identified increasing awareness of the HPV vaccine and improving healthcare worker training as potential areas for intervention.

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4. Impact of HPV vaccination and cervical screening on cervical cancer elimination: a comparative modelling analysis in 78 low-income and lower-middle-income countries.

Brisson M, Kim J, Canfell K, Drolet M, Gingras G, Burger E, et al.

Lancet. 2020 Mar 09;395(10224):575-590.
PubMed ID: 3200714132007146

ABSTRACT

BACKGROUND: The WHO Director-General has issued a call for action to eliminate cervical cancer as a public health problem. To help inform global efforts, we modelled potential human papillomavirus (HPV) vaccination and cervical screening scenarios in low-income and lower-middle-income countries (LMICs) to examine the feasibility and timing of elimination at different thresholds, and to estimate the number of cervical cancer cases averted on the path to elimination.

METHODS: The WHO Cervical Cancer Elimination Modelling Consortium (CCEMC), which consists of three independent transmission-dynamic models identified by WHO according to predefined criteria, projected reductions in cervical cancer incidence over time in 78 LMICs for three standardised base-case scenarios: girls-only vaccination; girls-only vaccination and once-lifetime screening; and girls-only vaccination and twice-lifetime screening. Girls were vaccinated at age 9 years (with a catch-up to age 14 years), assuming 90% coverage and 100% lifetime protection against HPV types 16, 18, 31, 33, 45, 52, and 58. Cervical screening involved HPV testing once or twice per lifetime at ages 35 years and 45 years, with uptake increasing from 45% (2023) to 90% (2045 onwards). The elimination thresholds examined were an average age-standardised cervical cancer incidence of four or fewer cases per 100 000 women-years and ten or fewer cases per 100 000 women-years, and an 85% or greater reduction in incidence. Sensitivity analyses were done, varying vaccination and screening strategies and assumptions. We summarised results using the median (range) of model predictions.

FINDINGS: Girls-only HPV vaccination was predicted to reduce the median age-standardised cervical cancer incidence in LMICs from 19·8 (range 19·4-19·8) to 2·1 (2·0-2·6) cases per 100 000 women-years over the next century (89·4% [86·2-90·1] reduction), and to avert 61·0 million (60·5-63·0) cases during this period. Adding twice-lifetime screening reduced the incidence to 0·7 (0·6-1·6) cases per 100 000 women-years (96·7% [91·3-96·7] reduction) and averted an extra 12·1 million (9·5-13·7) cases. Girls-only vaccination was predicted to result in elimination in 60% (58-65) of LMICs based on the threshold of four or fewer cases per 100 000 women-years, in 99% (89-100)

of LMICs based on the threshold of ten or fewer cases per 100 000 women-years, and in 87% (37-99) of LMICs based on the 85% or greater reduction threshold. When adding twice-lifetime screening, 100% (71-100) of LMICs reached elimination for all three thresholds. In regions in which all countries can achieve cervical cancer elimination with girls-only vaccination, elimination could occur between 2059 and 2102, depending on the threshold and region. Introducing twice-lifetime screening accelerated elimination by 11-31 years. Long-term vaccine protection was required for elimination.

INTERPRETATION: Predictions were consistent across our three models and suggest that high HPV vaccination coverage of girls can lead to cervical cancer elimination in most LMICs by the end of the century. Screening with high uptake will expedite reductions and will be necessary to eliminate cervical cancer in countries with the highest burden.

FUNDING: WHO, UNDP, UN Population Fund, UNICEF-WHO-World Bank Special Program of Research, Development and Research Training in Human Reproduction, Canadian Institute of Health Research, Fonds de recherche du Québec-Santé, Compute Canada, National Health and Medical Research Council Australia Centre for Research Excellence in Cervical Cancer Control.

WEB: 10.1016/S0140-6736(20)30068-4
IMPACT FACTOR: 59.102
CITED HALF-LIFE: 9.2

START COMMENTARY

Brisson et al. conducted a comparative modelling study to assess the impact of HPV vaccination and screening on the elimination of cervical cancer from 78 LMIC. The models yielded similar results: with aggressive HPV vaccination and twice-lifetime HPV screening, cervical cancer can be eliminated. The authors highlighted four limitations of this study. One limitation was the uncertainty around parameters projected for over 100 years. Another limitation was the assumption of aggressive scale-up of interventions. If assumed scale-up is not achieved, cancer cases averted would be impacted. The models did not account for the interactions between HIV and HPV, which is a factor in some high-burden LMICs. Finally, underreporting of cervical cancer cases through GLOBOCAN may impact elimination estimates. Strengths of this study were the agreement of results from three different models and the involvement of key experts throughout the development and interpretation of study results. As Vivien Davis Tsu mentioned in her comment to the article, while the intervention targets are ambitious, this study can motivate countries to assess realistic, regional actions towards the global goal of cervical cancer elimination.

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5. The role of place of residency in childhood immunisation coverage in Nigeria: analysis of data from three DHS rounds 2003-2013.

Obanewa O, Newell M.

BMC Public Health. 2020 Feb 05;20(1):123.
PubMed ID: 31996184

ABSTRACT

BACKGROUND: In 2017, about 20% of the world's children under 1 year of age with incomplete DPT vaccination lived in Nigeria. Fully-immunised child coverage (FIC), which is the percentage of children aged 12-23 months who received all doses of routine infant vaccines in their first year of life in Nigeria is low. We explored the associations between child, household, community and health system level factors and FIC, in particular focussing on urban formal and slum, and rural residence, using representative Nigeria Demographic Health Survey (NDHS) data from 2003, 2008 and 2013.

METHOD: Multilevel logistic regression models were applied for quantitative analyses of NDHS 2003, 2008 and 2013 data, singly, pooled overall and stratified by rural/urban, and within urban by formal and slum. We also quantify Population Attributable Risk (PAR) of FIC.

RESULTS: FIC for rural, urban formal and slum rose from 7.4, 25.6 and 24.9% respectively in 2003 to 15.8, 45.5 and 38.5% in 2013, and varied across sociodemographics. In pooled NDHS analysis, overall and stratified, final FIC adjusted odds (aOR) were: 1. Total population - delivery place (health facility vs home, aOR = 1.13, 95% CI = 0.73-1.73), maternal education (higher vs no education, aOR = 3.92, 95% CI = 1.79-8.59) and place of residence (urban vs rural, aOR = 1.69, 95% CI = 0.89-3.22). 2. Rural, urban formal and slum stratified: A.Rural - delivery place (aOR = 1.47, 95% CI = 1.12-1.94), maternal education (aOR = 4.99, 95% CI = 2.48-10.06). B.Urban formal - delivery place (aOR = 2.62, 95% CI = 1.43-4.79), maternal education level (aOR = 9.18, 95% CI = 3.05-27.64). C.Slums - delivery place (aOR = 5.39, 95% CI = 2.18-13.33), maternal education (aOR = 5.03, 95% CI = 1.52-16.65). The PAR revealed the highest percentage point increase in FIC would be achieved in all places of residence by maternal higher education: rural-38.15, urban formal-22.88 and slum 23.76, while non-attendance of antenatal care was estimated to lead to the largest reduction in FIC.

CONCLUSION: Although low FIC in rural areas may be largely due to lack of health facilities and immunisation education, the intra-urban disparity is mostly unexplained, and requires further qualitative and interventional research. We show the FIC point increase that can be achieved if specific sociodemographic variable (risk) are addressed in the various communities, thus informing prioritisation of interventions.

WEB: 10.1186/s12889-020-8170-6
IMPACT FACTOR: 2.567
CITED HALF-LIFE: 5.5

START COMMENTARY

Obanewa and Newell examined factors associated with fully immunized child coverage of Bacillus Calmette Guerin, oral polio vaccine, DPT, and measles vaccine for children aged 12–23 months using the 2003, 2008 and 2013 Demographic and Health Survey (DHS). Results of the multivariable model, stratified by rural, urban and slum populations were summarized in Table 3. Population attributable risk estimates were summarized in Table 4. Study limitations included potential recall bias when immunization cards were not available or for variables assessed by self-report and selection bias from the potential misalignment of sampling from older census data and recategorizing urban data into formal and slum using UN HABITAT guidelines. Despite these limitations, the authors identified a promising area for further investigation and intervention to address the low levels immunization coverage in Nigeria.

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6. Oral cholera vaccination coverage in an acute emergency setting in Somalia, 2017.

Lubogo M, Mohamed A, Ali A, Ali A, Popal G, Kiongo D, et al.

Vaccine. 2020 Mar 09;38 Suppl 1:A141-A147.
PubMed ID: 31980193

ABSTRACT

The first oral cholera vaccination (OCV) campaign in Somalia was implemented between March and October 2017. It was the first time the Ministry of Health had introduced and used OCV as part of the cholera prevention and control strategies. The Ministry of Health aimed to cover 1.1 million people ≥ 1 year with 2 doses of the OCV in 11 high-risk districts. Overall, 2-dose administrative OCV coverage in all targeted districts was 95.5%. Following the campaign, a random sample survey was conducted in 9 out of 11districts to evaluate coverage, awareness, reasons for non-vaccination, the water and sanitation status of households, and any resulting adverse events. The survey was conducted in 2 phases. Of the 3,715 eligible individuals in the first phase, 92.5% (95% CI 91.4-93.6%) received 2 doses of the OCV and 7.0% (95% CI 6.0-8.2%) 1 dose. In the second phase, of 1,926 individuals, 94.1% (95% CI 92.9-95.1%) received 2 doses and 2.6% (95% CI 2.0-3.4%) 1 dose. Despite challenges, this experience shows that OCV campaigns can be implemented in acute humanitarian settings through existing immunization structures.

WEB: 10.1016/j.vaccine.2020.01.015
IMPACT FACTOR: 3.269
CITED HALF-LIFE: 3.1

START COMMENTARY

Lubogo et al. conducted a cross-sectional survey of oral cholera vaccination (OCV) coverage in 9 of the 11 districts selected for OCV campaigns. Using the EPI method, they randomly sampled households within each district. Refer to Table 3 for a summary of coverage by district. Table 4 summarizes coverage by age group. Limitations of the study included the exclusion of two districts for security reasons, potential recall bias due to lag between timing of vaccination campaign and survey, potential selection bias using the spin bottle method and migrating populations. Strengths of this study were the use of a survey to estimate coverage (versus administrative data) and assessment of reasons for non-vaccination.

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7. Strengthening routine immunization in Papua New Guinea: a cross-sectional provincial assessment of front-line services.

Morgan C, Saweri O, Larme N, Peach E, Melepia P, Au L, et al.

BMC Public Health. 2020 Mar 09;20(1):100.
PubMed ID: 31973691

ABSTRACT

BACKGROUND: Routine immunization programs face many challenges in settings such as Papua New Guinea with dispersed rural populations, rugged geography and limited resources for transport and health. Low routine coverage contributes to disease outbreaks such as measles and the polio that re-appeared in 2018. We report on an in-depth local assessment that aimed to document immunization service provision so as to review a new national strategy, and consider how routine immunization could be better strengthened.

METHODS: In East New Britain Province, over 2016 and 17, we carried out a cross-sectional assessment of 12 rural health facilities, staff and clients. The study was timed to follow implementation of a new national strategy for strengthening routine immunization. We used interview, structured observation, and records review, informed by theory-based evaluation, a World Health Organization quality checklist, and other health services research tools.

RESULTS: We documented strengths and weaknesses across six categories of program performance relevant to national immunization strategy and global standards. We found an immunization service with an operational level of staff, equipment and procedures in place; but one that could reach only half to two thirds of its target population. Stronger routine services require improvement in: understanding of population catchments, tracking the unvaccinated, reach and efficiency of outreach visits, staff knowledge of vaccination at birth and beyond the first year of life, handling of multi-dose vials, and engagement of community members. Many local suggestions to enhance national plans, included more reliable on-demand services, integration of other family health services and increased involvement of men.

CONCLUSIONS: The national strategy addresses most local gaps, but implementation and resourcing requires greater commitment. Long-term strengthening requires a major increase in centrally-allocated resources, however there are immediate locally feasible steps within current resources that could boost coverage and quality of routine immunization especially through better population-based local planning, and stronger community engagement. Our results also suggest areas where vaccination campaigns in PNG can contribute to routine immunization services.

WEB: 10.1186/s12889-020-8172-4
IMPACT FACTOR: 2.567
CITED HALF-LIFE: 5.5

START COMMENTARY

Morgan et al. conducted a cross-sectional assessment of the impact of the Special Integrated Routine EPI Strengthening Program (SIREP) to improve immunization services in Papua New Guinea. Priorities of SIREP included "more efficient local planning based on locations of child populations, intensification of outreach services with realistic scheduling based on local resources, improved local information systems […], and staff training to support new vaccine introductions […]." Data collection methods were summarized in Table 1. Key findings were summarized in Table 2. Recommendations were summarized in Table 3. Study limitations included potential reporting bias (e.g., social acceptability), biases associated with wet weather during the time of data collection, restricted assessment of services already provided (i.e., services not in existence were not included in the study), and potential biases with a single author coding interviews. Strengths of the study included the inclusion of representative functioning services and the use of mixed methods to provide a more in-depth investigation of the impact of SIREP.

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8. Family Health Days program contributions in vaccination of unreached and under-immunized children during routine vaccinations in Uganda.

Mupere E, Babikako H, Okaba-Kayom V, Mutyaba R, Mwisaka M, Tenywa E, et al.
PLoS ONE. 2020 Jan 27;15(1):e0218239.
PubMed ID: 31951608

ABSTRACT

BACKGROUND: We explored the contributions of the Family Health Days (FHDs) concept, which was developed by the Uganda Ministry of Health (MOH) and UNICEF as a supplementary quarterly outreach program in addition to strengthening the routine expanded program for immunization (EPI), with the aim to increase coverage, through improved access to the unimmunized or unreached and under-immunized children under 5 years.

METHOD: A cross-sectional descriptive study of the Uganda MOH, Health Management Information Systems (HMIS) and UNICEF in house FHDs data was conducted covering six quarterly implementations of the program between April 2012 and December 2013. The FHDs program was implemented in 31 priority districts with low routine vaccination coverage from seven sub-regions in Uganda in a phased manner using places of worship for service delivery.

RESULTS: During the six rounds of FHDs in the 31 districts, a total of 178,709 and 191,223 children received measles and Diphtheria-Pertussis-Tetanus (DPT3) vaccinations, respectively. The FHDs' contributions were 126% and 144% for measles and 103% and 122% for DPT3 in 2012 and 2013, respectively of the estimated unreached annual target populations. All implementing sub-regions after two rounds in 2012 attained over and above the desired target for DPT3 (85%) and measles (90%). The same was true in 2013 after four rounds, except for Karamoja and West Nile sub-regions, where in some districts a substantial proportion of children remained unimmunized. The administrative data for both DPT3 and measles immunization showed prominent and noticeable increase in coverage trend in FHDS regions for the months when the program was implemented.

CONCLUSION: The FHDs program improved vaccination equity by reaching the unreached and hard-to-reach children and bridging the gap in immunization coverage, and fast tracking the achievement of targets recommended by the Global Vaccine Action Plan (GVAP) for measles and DPT3 (85% and 90% respectively) in implementing sub-regions and districts. The FHDs is an innovative program to supplement routine immunizations designed to reach the unreached and under immunized children.

WEB: 10.1371/journal.pone.0218239
IMPACT FACTOR: 2.776
CITED HALF-LIFE: 2.7

START COMMENTARY

Mupere et al. conducted a study to describe the contribution of Family Health Days on vaccination coverage in Uganda. They used data from the Health Management Information System and Annual Health Sector Performance Report at the Ministry of Health and UNICEF summary data. Figure 1 shows the proportion of children under 1 year immunized for the third dose of the pentavalent vaccine and the measles vaccine in 2012 and 2013 by Family Health Days, routine immunization and other efforts, and those unreached. Roughly 20–25% of immunizations were attributed to Family Health Days. Limitations of the study include potential overcounting (evidenced by the proportion >100%, commonly observed with administrative immunization data) and inability to establish a causal relationship between Family Health Days and differences in immunization coverage.

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9. The potential impact of dengue vaccination with, and without, pre-vaccination screening.

Coudeville L, Baurin N, Shepard D.

Vaccine. 2020 Feb 11;38(6):1363-1369.
PubMed ID: 31879126

ABSTRACT

BACKGROUND: The World Health Organization defined a 'screen and vaccinate' strategy as its recommended policy for the licensed dengue vaccine (Dengvaxia, Sanofi Pasteur), so that only individuals with previous dengue infection are vaccinated. The objectives of the present study were to build upon a recently published analysis of the benefits and risks associated with dengue vaccination to evaluate the public health impact and cost-effectiveness of a screen and vaccinate strategy.

METHODS: The current analysis was based on a previously reported transmission model and added, for the screening part, three rapid diagnostic tests with identical specificity (99%) but alternative sensitivities (50-70-90%) in the detection of prior dengue infection. The impact of a screen-and-vaccinate strategy considered nine settings representing different levels of transmission intensity. Outcomes (dengue-related hospitalizations, severe dengue, and symptomatic dengue) were assessed according to the level of transmission setting. The cost-effectiveness of vaccination in 10 endemic countries was also assessed.

RESULTS: Although associated, in most cases, with a lower population impact than a 'no-screening' approach, a screen and vaccinate strategy is more effective in reducing the number of hospitalized and severe cases prevented per vaccination performed and generates positive health benefits for individuals screened and subsequently vaccinated. As a result, this intervention is cost-effective in all countries considered except for very low transmission settings. The overall population impact of a screen and vaccinate approach is also likely to be improved by the use of several rounds of screening (up to 48% reduction in dengue hospitalization over 10 years with 5 rounds).

CONCLUSIONS: WHO recommended option of a screen and vaccinate policy is likely to have a positive impact both at the individual and population level across a wide range of transmission settings and has the potential to be as, if not more, cost-effective than a no screening strategy.

WEB: 10.1016/j.vaccine.2019.12.012
IMPACT FACTOR: 3.269
CITED HALF-LIFE: 3.1

START COMMENTARY

Developing an immunization strategy for dengue has been a particularly challenging endeavor for public health officials. The live, attenuated, tetravalent vaccine is protective among individuals seropositive for dengue; however, for seronegative individuals, subsequent infection following vaccination could result in severe disease akin to a second infection of an unvaccinated seropositive individual. Thus, Coudeville et al. seek to model the impact of a “screen and vaccinate” strategy. A strength of this study included testing various scenarios to understand what factors most impact health outcomes and what scenarios would have the greatest impact. Limitations of the study include potential lack of generalizability to other rapid diagnostic tests (RDTs) with different sensitivity and specificity values as only one RDT was modeled and to other scenarios not explored in the analysis (e.g., settings with different case fatality estimates).

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10. A qualitative study on parents' reasons and recommendations for childhood vaccination refusal in Malaysia.

Rumetta J, Abdul-Hadi H, Lee Y.

J Infect Public Health. 2020 Feb 10;13(2):199-203.
PubMed ID: 31431420

ABSTRACT

BACKGROUND: Vaccine-related diseases are increasing in developing countries. This study aimed to explore parents' reasons for refusal of childhood vaccinations in Malaysia and their recommendations on addressing their concerns.

METHODS: A qualitative study design involving individual both face-to-face and online in-depth interview was used. The topic guide was developed from the Health Belief Model theoretical framework. Seven face-to-face and seven online interviews were conducted with parents in the Klang Valley (an urban area) who had refused childhood vaccination. All interviews were audio-recorded, transcribed verbatim and checked. Thematic approach was used to analyze the data. Data was collected until data saturation was reached.

RESULTS: Findings were summarized into two main categories: Personal Health Beliefs and Vaccine Related Concerns. Six personal health beliefs were identified: lack of confidence in modern medicine and health care personnel, pharmaceutical conspiracy to sell medicines, preference to a natural approach to health, personal instincts, religious beliefs and having a partner with similar beliefs. Four main vaccine-related concerns were identified: negative effects and content concerns, doubts of necessity and lack of information and knowledge regarding vaccines. Parents recommended that more empathy from healthcare professionals and evidence on safety and content purity would help them reconsider vaccination.

CONCLUSION: Parents had multiple reasons for refusing childhood vaccinations but felt that communication and empathy from healthcare professionals was lacking. Besides individual consultations with parents, addressing these concerns at multiple levels in the health care system and society may help to increase the uptake of childhood vaccinations in the future.

WEB: 10.1016/j.jiph.2019.07.027
IMPACT FACTOR: 2.487
CITED HALF-LIFE: n/a

START COMMENTARY

Rumetta et al. conducted a qualitative assessment of reasons for childhood vaccination refusals among a small sample of parents recruited at the Primary Care Clinic at the University of Malaya in Malaysia. A brief summary of findings is provided in Table 2. Limitations of the study included lack of generalizability to parents with lower educational status and parents residing in rural settings. Authors called for future study of anti-vaccination practices to a larger and more diverse group of parents.

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Appendix

The literature search for the March 2020 Vaccine Delivery Research Digest was conducted on February 25, 2020. We searched English language articles indexed by the US National Library of Medicine and published between January 15, 2020 and February 14, 2020. The search resulted in 332 items.

SEARCH TERMS

(((((vaccine[tiab] OR vaccines[tiab] OR vaccination[tiab] OR immunization[tiab] OR immunisation[tiab] OR vaccine[mesh] OR immunization[mesh]) AND (logistics[tiab] OR supply[tiab] OR “supply chain”[tiab] OR implementation[tiab] OR expenditures[tiab] OR financing[tiab] OR economics[tiab] OR “Cost effectiveness”[tiab] OR coverage[tiab] OR attitudes[tiab] OR belief[tiab] OR beliefs[tiab] OR refusal[tiab] OR “Procurement”[tiab] OR timeliness[tiab] OR systems[tiab])) OR (“vaccine delivery”[tiab])) NOT (“in vitro”[tiab] OR “immune response”[tiab] OR gene[tiab] OR chemistry[tiab] OR genotox*[tiab] OR sequencing[tiab] OR nanoparticle*[tiab] OR bacteriophage[tiab] OR exome[tiab] OR exogenous[tiab] OR electropor*[tiab] OR “systems biology”[tiab] OR “animal model”[tiab] OR cattle[tiab] OR sheep[tiab] OR goat[tiab] OR rat[tiab] OR pig[tiab] OR mice[tiab] OR mouse[tiab] OR murine[tiab] OR porcine[tiab] OR ovine[tiab] OR rodent[tiab] OR fish[tiab])) AND (English[LA]) (“2020/01/15”[PDAT] : “2020/02/14”[PDAT]))