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## Socio-medical and Demographic Hindering Blockades in Implementation of Expanded Program on Immunization Among Mothers Working in Brick Kilns: a Study of District Vehari, Pakistan

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### ABSTRACT

The present research was designed to determine the socio-medical and demographic hindering blockades in the implementation of Expanded Program on Immunization (EPI) among mothers working in brick kilns of district Vehari, Pakistan. A mixed methodology was used to find out the viewpoints of mothers working in brick kilns (N=105) and nearby village dwellers (N=23) about the study phenomenon. The results of the survey method divulged that younger age, low education level, nuclear family structure, and low familial monthly income were the major demographic hindering blockades in implementation of EPI program among the respondents. Additionally, the participants also mentioned that non-awareness (n=81), lack of accessibility (n=94), inadequate information about vaccinators (n=72), extensive working conditions of mothers during pregnancy (n=99), non-accessibility of mothers during EPI coverage (n=74), deprivation of zero OPV and BCG dosage after birth (N=61, N=70 respectively) and native believe of mothers that EPI is non-effective and disease-oriented (n=69) were the major socio-medical hindering blockades in implementation of EPI among the targeted mothers. During Informal Discussions (IDs), the village dwellers reported that illiteracy, language barriers, and cultural myths were the major obstructing undercurrents in the implementation of EPI program in the study milieu. Regular training and awareness programs along with enhancing the technical knowledge, communication skills, and behavioral conduct of vaccinators were the major recommendations that can improve the implementation of EPI program among brick kiln workers of study locale.

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## 1. Introduction

Immunization is the public health practice that protects children from plentiful infectious diseases at the global level (Gong et al., 2019; Mangrio et al., 2008). Aligning this, WHO launched an Expanded Program on Immunization (EPI) in 1974 to ensure the availability and accessibility of low-cost vaccines to the people (Masud & Navaratne, 2012). In 1976, EPI was launched in Pakistan to protect children from 9 dreadful diseases. For completion of EPI course, the parents are recommended to visit the EPI center at least five times during the first year and one time during the second year (Haq et al., 2019; Javaid et al., 2009; Pakistan Bureau of Statistics, 2019; Salamati & Razavi, 2016).

In Pakistan, <70% children aged 12-23 months are fully vaccinated (Khowaja et al., 2015; Owais et al., 2013). To address and combat these critical health situations, the government of Pakistan is trying its level best to increase the ratio of vaccination among infants. The report generated by WHO divulged that 22.6 million children under one-year age bracket did not receive proper vaccination against the dreadful diseases. It was also illustrated that more than 70% of children from 22.6 million population lived in Asian and African countries (Mohamud et al., 2014). Through another empirical document presented by National Emergency Action Plan in 2018, >39.3 million children were vaccinated through two lac front-line vaccinators in Pakistan (Hussain et al., 2017). These rigorous efforts of EPI program ensure the reduction of infant mortality from infectious diseases to 1.8% (Riaz, 2013; World Health Organization, 2015).

Although government efforts are improving the immunization process in Pakistan, still brick kiln workers are considered to be the most ignorant population. To the best of our knowledge, there is no empirical evidence in the previous theoretical knowledge that directly addressed the hindering blockades in implementation of EPI in the study situate of district Vehari, Pakistan. Therefore, the present research was designed to address the subsequent objectives i) to find out the demographic correlates of mothers working in brick kilns ii) to determine various hindering blockades in the implementation of EPI among mothers working in brick kilns, and iii) to explore the native lookouts of nearby village dwellers about the indigenous causes of the study phenomenon.

## 2. Methods and Materials

The universe of the present research was all the brick kiln workers in district Vehari. Among these workers, the married women having children were selected as the target population. The selection criterion for these participants was based on subsequent parameters i.e. i) Mothers must be working on brick kilns ii) The sampled mothers must have at least one child in the age span of fewer than 2 years (12-23 months), and iii) These mothers were undergoing frequent/occasional/rare/no vaccination to their children.

The home-grown indigenous facts revealed that brick kiln workers were considered to be the most “problematic” and “hard to reach population.” Due to the difficulty of accessibility, the native mothers working in brick kilns were targeted through two phases. In the first phase, the availability and accessibility of EPI cards in the targeted respondents were confirmed. Afterward, child history related to EPI provision was checked through BCG scars on their right arms. In accordance with this selection criterion, N=105 mothers working in brick kilns were surveyed through a convenient sampling technique. As the topic was not frequently researched in the study locale, therefore the researchers also conducted IDs with nearby village dwellers to explore their underlying subjective viewpoints about the study phenomenon. For this purpose, N=23 village dwellers were targeted

from three adjacent villages (i.e. X-Y-Z) near the brick kilns of the study geographical vicinity.

During survey method, interview schedule was used as a tool for the data collection process. This tool was further comprised of subsequent sections i.e. i) Demographic profile of the respondents, and ii) Socio-Medical hindering blockades in implementation of EPI coverage among mothers working in brick kilns. Pertaining to this scenario, demographic correlates were segregated as mothers' age and education, family type and sex of the baby to be immunized. The major dimensions of the said hindrances were related to lack of i) awareness about EPI ii) access towards EPI iii) vaccinators information iv) vaccinators recommended visits v) digital access vi) mothers ID card vii) traditional and inadequate medical services utilization viii) mothers' access for EPI during pregnancy, and ix) provision of zero OPV and BCG doze immediately after birth. Moreover, the questions also addressed the excessive working conditions of mothers during pregnancy, fear of child disease among mothers, excessive fear to access EPI center, non-believers of the vaccination process, and mother's non-vaccination with TT during pregnancy. For IDs, we explained the purpose of the research to village dwellers and engaged them in discussing their viewpoints about the study phenomenon. Therefore, no formal research tool was used for the purpose of data collection during IDs.

After designing the tool of data collection, the ethical approval was taken by the first author during his M.Phil. proposal defense in front of the Ethical Review Committee (ERC) in Bahauddin Zakariya University, Multan. A group of experts in the field of Medical Sociology, Rural-Urban Sociology, General Sociology, Gender Studies, and Research Ethics reviewed the tools, techniques, and procedures of the research proposal and approved the topic with some minor changes. After getting approval from ERC, the first author went into the field and collected the data through the informed consent of the respondents.

Afterward, the quantitative data was analyzed by using SPSS-Ver-21. Chi-square and binary logistic regression analysis were used to analyze the data. The dependent variable was categorical and binary i.e. 0=Do not undergone through immunization process 1=Undergone through immunization process, therefore binary logistic regression analysis was used. Moreover, due to categorical nature of the study variables related to hindering blockades in the implementation of EPI, chi-square test was used to establish the association between the study variables. Later on, qualitative data was analyzed manually. IDs were written in the form of narrations which were then segregated in codes formation, consensual agreement of participants, and contextualization of codes about the investigated phenomenon.

### **3. Results of survey method**

#### **3.1 Demographic correlates of mothers working in brick kilns**

As mentioned in Table I, age, education level, family type, and family income were the major demographic hindering blockades for EPI coverage among the sampled respondents. Relating this, the ORs showed that the mothers who were in >24 years age span (n=35, 33.3%) were six times more motivated towards immunization of their children (under 2 years age span) as compared to the mothers who were <20 years old. The education level also revealed that the sampled mothers who were primarily educated were nearly two times more inclined towards vaccination of their children under 2 years of age span as compared to the illiterate mothers working on brick kilns. Afterward, the respondents who lived in the joint family system became 0.687\* times more motivated towards immunization of their children in comparison with the reference category (nuclear family system).

The income level divulged that the respondents whose monthly income of the family was >10,000PKR (n=19, 18.1%) were more than one time more inclined towards vaccinating their children than the mothers whose monthly family income was <5,000PKR (n=34, 32.4%).

### 3.2 Socio-medical hindering blockades in implementation of EPI among mothers working in brick kilns

As evident from Table-II, it is evident that mothers did not have awareness and access to EPI program in the study locale. An overwhelmed majority of respondents i.e. n=81 (77.1%) and n=94 (89.5%) agreed on this stance ( $p=0.000^{***}$ ). The other reported hindering blockades by the respondents were related to non-sufficient vaccinators visits (n=69, 65.7%) and inadequate information about the role of vaccinators in coverage of EPI program (n=69, 65.7%). The results also showed that n=55 (52.4%) mothers have inadequate access to digital technology which deprived them to get information about EPI program in the study locale. In extension, the study findings also demonstrated the major hindering obstructions in implementation of EPI coverage. Relating this, n=99 (94.3%) mothers identified that they had to face extensive working conditions during pregnancy ( $p=0.012^*$ ) and n=74 (70.5%) respondents argued that they did not have access to EPI program during their antenatal period ( $p=0.000^{**}$ ). As per the post-natal period was concerned, then it was evident that mothers were mostly deprived of zero OPV and BCG doze immediately after birth. Majority respondents i.e. n=61 (58.1%) and n=70 (66.7%) agreed on these hindering obstructions (<.05 level of significance). Additionally, mothers also undergone through excessive work burden on brick kilns ( $p=0.000^{**}$ ) and hesitated to visit EPI center due to their long working hours (n=70, 66.7%). The results also disclosed that mothers working on brick kilns believed that EPI program is non-effective and the major cause of diseases among children under 2 years of age span. Contrariwise, the above-mentioned table demonstrated insignificant results for three major predictors as the major impediments towards coverage of EPI program i.e. i) mothers were mostly under the legal age and they did not possess ID cards ii) mothers usually got traditional methods of childbirth and no immediate medicines after birth, and iii) mothers usually experienced fear of childhood diseases.

**Table-I: Demographic correlates of mothers working in brick kilns (N=105)**

| Demographic correlates                    | Univariate analysis    | Binary Logistic Regression  |
|---|------------------------|-----------------------------|
|   | Frequency (Percentage) | Unadjusted Odd Ratios (ORs) |
| <b>Age of the respondents</b>             |                        |                             |
| <20 years                                 | 46 (43.8)              | 1 (RC)                      |
| 20-24 years                               | 24 (22.9)              | 3.274 <sup>**</sup>         |
| >24 years                                 | 35 (33.3)              | 6.423 <sup>**</sup>         |
| <b>Education level of the respondents</b> |                        |                             |
| Illiterate                                | 100 (95.2)             | 1 (RC)                      |
| Primary educated <sup>#</sup>             | 05 (4.8)               | 1.817 <sup>**</sup>         |
| <b>Family system of the respondents</b>   |                        |                             |
| Nuclear family system                     | 14 (13.3)              | 1 (RC)                      |
| Extended family system                    | 18 (17.2)              | 0.433 <sup>*</sup>          |
| Joint family system                       | 73 (69.5)              | 0.687 <sup>*</sup>          |
| <b>Family income of the respondents</b>   |                        |                             |

|                 |           |        |
|-----------------|-----------|--------|
| <5,000PKR       | 34 (32.4) | 1 (RC) |
| 5,000-10,000PKR | 52 (49.5) | 1.228* |
| >10,000PKR      | 19 (18.1) | 1.990* |

\*The categories for educated was further divided into primary, middle and secondary. But the respondents were not educated to more than primary level. Therefore, only illiterate and primary level educational categories were mentioned

**Table-II: Socio-medical hindering blockades in implementation of EPI among mothers working in brick kilns (N=105)**

| Variables related to socio-medical hindering blockades                                       | Agreed respondents     | Chi-Square |
|--|------------------------|------------|
|  | Frequency (Percentage) |            |
| Mothers do not have awareness about EPI program  | 81 (77.1)              | 0.000***   |
| Mothers do not have access to EPI program  | 94 (89.5)              | 0.000***   |
| Mothers do not have adequate information about vaccinators and their role in EPI coverage    | 72 (68.6)              | 0.000**    |
| Vaccinators do not visit the targeted places of brick kilns during EPI coverage              | 69 (65.7)              | 0.001*     |
| Mothers do not have adequate access to technology such as mobile phones and media            | 55 (52.4)              | 0.039*     |
| Mothers are mostly under the legal age and they did not possess ID cards                     | 88 (83.8)              | 0.119 (Ns) |
| Mothers usually get traditional methods of childbirth and no immediate medicines after birth | 77 (73.3)              | 0.255 (Ns) |
| Mothers usually undergo extensive working conditions during their pregnancy duration         | 99 (94.3)              | 0.012*     |
| Mothers do not have access to EPI program during the pregnancy duration                      | 74 (70.5)              | 0.000**    |
| Mothers are deprived of zero OPV immediately after birth                                     | 61 (58.1)              | 0.011*     |
| Mothers are deprived of BCG doze immediately after birth                                     | 70 (66.7)              | 0.010*     |
| Mothers underwent through excessive work burden on brick kilns                               | 83 (79.0)              | 0.000**    |
| Mothers usually experience fear of child diseases  | 62 (59.0)              | 0.558 (Ns) |
| Mothers are hesitant to visit EPI centers due to their long working hours                    | 70 (66.7)              | 0.019*     |
| Mothers native believe on EPI is non-effective and disease-oriented                          | 69 (65.7)              | 0.001*     |

#### 4. Results of Informal Discussions

During IDs mentioned in Table-III, the nearby village dwellers reported that the major hindrance in implementation of EPI program was illiteracy of brick kiln workers. This illiteracy was

lined up with lack of awareness, a strong belief system about negative impacts of EPI on the health of children (under 2 years of age), and low socio-economic status of study participants. These wage-earners worked on brick kilns and earned daily wages (Dehari) to meet their day-to-day basic needs. In agreement, a 53 years old village dweller argued that;

“Brick kiln workers face frequent delays in their daily wages which becomes the major cause of starvation in their houses. Then, of course, a starved mother must think of feeding her children rather than immunizing them.”

During data collection, it was evident that brick kiln workers were striving to meet the basic needs (food, clothes, and shelter) of their children rather than adopting their health care needs. Extending this argument, n=22 village dwellers discussed that these deprivations put brick kiln mothers in glass ceiling effects where they were captivated by their native socialization codes and cultural myths. During IDs, n=18 village dwellers put forth a consensual argument that brick kiln workers were unable to afford the digital devices (such as mobile phones, televisions), therefore they were restricted towards their particular cultural myths. A 44 years old woman in adjacent village Z argued that;

“Brick kiln mothers do not have digital access which can give them awareness about the importance of immunization process.”

The results from IDs also disclosed that the most salient hindrance in implementation of EPI program among brick kiln workers was language blockades. Village dwellers reported that their native language in the study situations was “Saraiki” but brick kiln workers used various slangs (specific to their working rituals) which were poles apart from the original native language. A teenage boy in village Y reported that;

“Our prestigious locality (Waseb) used sweet language (Meethi zaban) of Saraiki. But the brick kiln workers’ ascents, colloquial speech, and slangs make their communication shoddier and non-understandable.”

It was also reported that brick kiln workers used abuses in their commonplace communication quite frequently which became a major source of hindrance for implementation of EPI among them. In extending their arguments, n=17 village dwellers reported that the usage of abusive language distorted the communication process between brick kiln workers and vaccinators. Moreover, n=13 participants gave a consensual argument that literate vaccinators felt hesitated and annoyed during conversations with brick kiln workers which obstructed their vaccination process.

Afterward, village inhabitants also reported that cultural myths prevailing in the study locale became the major stumbling block in implementation of EPI among children of brick kiln workers. In this regard, the major prevailing myth was that immunization was related to decreasing weight and increasing physical disabilities among children of under 2 years age bracket. n=20 and n=09 village dwellers gave a consensual viewpoint on these statements respectively. During IDs, a youngster extended this argument and revealed that;

“As the brick kiln mothers are mostly poor and worked during their pregnancy period, therefore the newborn babies are mostly weak. Conversely, cultural myths manifested

that the immunization process weakens their children and induces various diseases in them after puberty.”

Aligning this, the additional cultural myths that hindered the implementation of EPI in the study situate were i) this program is Western-based agenda which is used to induce diseases among children after puberty (n=21) and ii) rumors about media portrayals of fake vaccination (n=14). An old man with obstinate traditional ideologies demonstrated that;

“We have a strong cultural system but Western immunization agendas want to ruin our children. The brick kiln women are concerned for their children’s health and they are right in hindering this process because ‘a mother has the right to save her child from every single malevolent.’

## 5. Discussion

The results of the survey method revealed that 95.2% of targeted brick kiln workers were illiterate while 4.8% were literate up to school education. It was also divulged that literate respondents were 2.312\*\* times more motivated towards immunization of their children (aged 12-23 months) as compared to illiterate females. In compliance with this finding, previous studies from underdeveloped countries also validated this fact (Barman et al., 2009; Kidane & Tekie, 2003, Odusanya et al., 2008). These studies explained that well-educated mothers have better knowledge and recognition towards vaccination of their children as compared to illiterate mothers.

The other related demographic variable was age of the mother which hinders immunization among the sampled respondents. In this regard, it was clearly evident that the mothers who crossed their 20’s age span became 8.762\*\* times more motivated to vaccinate their children in comparison with the reference category i.e. <20 years age span. This shows that an increase in mothers’ age also increases their inclination towards vaccination of their children under 2 years of age bracket as compared to the mothers who were in younger age span. The aforementioned studies conducted in Bangladesh also endorsed our age-related demographic correlates (Biswas et al., 2001; Rahman & Obaida, 2010).

The findings of the present study also showed that frequent visits of vaccinators also contributed towards a higher proportion of immunization among brick kiln workers. Validating this, Jamil et al. (1999); Mangrio et al. (2008) also divulged that vaccinators’ visits are directly proportional to the probability of immunization among children aged 12-23 years. In recent empirical evidences from Pakistan, Hassan et al., (2017) and Riaz et al. (2018), it was endorsed that the health care system in Pakistan is weak where vaccinators have to face various impediments in implementing EPI program.

Despite the vaccinators’ visits, it was also evident from the study findings that mothers’ TT vaccination is related to childhood immunization at a later age. This finding was also supported by the previous studies conducted by Bugvi et al., (2014) and Etana & Deresssa (2012). Moreover, the present study also showed that inadequate usage of medical services became the insignificant predictor for children immunization in age span of 12-23 months. Inconsistent with the present study, previous researches conducted by Abdulraheem et al. (2011), Mebrahtom & Birhane (2013) authenticated that usage of traditional methods for childbirth became the major hindering factor for the immunization process of children.

## **6. Conclusion**

In conclusion, the major demographic factors towards immunization process were age, education level, and family type of mothers working on brick kilns. Moreover, the sampled mothers also avoided immunizing their female children aged 12-23 months as compared to their male children. Despite these demographic factors, various socio-medical underlying dynamic causes were also overly involved in impeding the program of EPI among females working on brick kilns. These factors were lack of awareness and access towards EPI program, inadequate provision of zero OPV and BCG dosage immediately after birth, disproportionate fear of physiological problems among children after immunization, and excessive work burden on mothers during their pregnancy epoch. These factors were also aligned with lack of mothers' digital access to comprehend the importance of immunization programs, absence of recommended visits of vaccinators for EPI, and mother's self-vaccination with TT during the pregnancy era.

## **7. Recommendations**

Based on the findings of the present study, we gave the following recommendations to improve the implementation of EPI program among brick kiln workers in the present research vicinity.

1. Awareness programs about the importance of EPI must be launched by health department in collaboration with government. As the brick kiln workers were not equipped with digital devices, therefore a team of researchers must be appointed to ensure interactional awareness with this hard-to-reach population.
2. Frequent visits of vaccinators to the mothers working in brick kilns can aware these workers about the importance of immunization process.
3. Regular training can enhance technical knowledge, communication skills, and behavioral conducts of health staff (vaccinators) towards mothers working in brick kilns.
4. It must be ensured by the health department that vaccinators should muddle through the language barriers of brick kiln workers.
5. A team of health workers must be recruited to ensure regular visits to brick kilns for the purpose of breaking their indigenous cultural myths about harmful effects of immunization on the physiological health of their children in 12-23 months of age span.



**Table-III : Major reported hindering obstructions in implementation of EPI among mothers working in brick kilns by village dwellers during IDs (N=23)**

| Hindering obstructions themes | Codes formation  | Codes segregation | Consensual agreed participants | Contextualization of codes   |
|-------------------------------|--|-------------------|--------------------------------|--|
| Illiteracy                    | Lack of awareness  | Deductive         | 16                             | Brick kiln workers possessed a lack of awareness about the importance of immunization to combat various diseases of children in the 12-23 months of age span.  |
|                               | Inability to use social and mass media to get awareness about immunization | Inductive         | 18                             | Brick kiln workers were not accessible towards digital and mass media due to unawareness and low socio-economic status. Therefore, these workers were ineffectual to comprehend the importance of immunization process for their children. |
|                               | Believe in cultural myths about avoiding immunization                      | Inductive         | 22                             | Brick kiln workers avoid immunization process or skip some visits of vaccinators due to cultural myths about the negative implications of immunization on physiological health of their children.  |
| Language barriers             | Usage of slangs by brick kiln workers                                      | Inductive         | 15                             | Brick kiln workers used various types of slangs in their communication process which is not comprehended by the native village dwellers. These slangs caused the major communication barrier between vaccinators and brick kiln workers.   |
|                               | Inappropriate language usage/<br>Abusive language usage                    | Inductive         | 17                             | Brick kiln workers used inappropriate and abusive language towards vaccinators which hindered the completion of immunization process.  |
|                               | Vaccinators inability to understand the language of brick kiln             | Deductive         | 13                             | The indigenous language of brick kiln workers was “Saraki” but the ascent and slangs diverged it from the native language. This problem increases the  |

|   |  |           |    |   |
|---|--|-----------|----|---|
|   | workers  |           |    | language barrier between mothers working on brick kilns and vaccinators.  |
| Cultural myths about negative implications of EPI program | Immunization will decrease the weight of a child   | Inductive | 20 | Among brick kiln workers, the major myth related to immunization process was that it causes considerable weight loss among children.  |
|   | Immunization is Western-based medical treatment that becomes the cause of various diseases after 30 years of age | Inductive | 21 | In cultural contextualization, the native myths related to the immunization process were centered on “Western-based medical induction in Pakistan” which became the major cause of infectious and carcinogenic diseases after the onset of puberty. |
|   | Immunization causes physical disabilities among children   | Deductive | 09 | Due to some indigenous examples, the major myth related to EPI program was that it causes physical disabilities such as polio among children or adolescents because the vaccines were considered to be counterfeit.                                 |
|   | Rumors about media portrayals of fake vaccinations etc. cause a fear of immunization among brick kiln workers    | Deductive | 14 | The major myth about inefficiency of immunization process was related to media portrayals about fake polio vaccinations etc. which became the major underlying motivation for brick kiln mothers to avoid these vaccinations.                       |

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