Integrating community and basic health unit services to strengthen routine
immunization in Panjgur District Balochistan: A quasi experimental study

Mr. Zulfiqar Ali

A Dissertation Submitted in Partial Fulfillment of the Requirements

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การบูรณาการชุมชนและการให้บริการสุขภาพปฐมภูมิ เพื่อส่งเสริมให้วัคซีนในอำเภอปัญจการ
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Thesis Title	Integrating community and basic health unit services to strengthen routine immunization in Panjgur District Balochistan: A quasi experimental study
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Thesis Advisor	Associate Professor Sathirakorn Pongpanich, Ph.D.

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ซัลฟิการ์ อาลี : การบูรณาการชุมชนและการให้บริการสุขภาพปฐมภูมิ เพื่อส่งเสริมให้วัคซีนในอำเภอปัญจการ รัฐบัลลูกิสสถาน: การศึกษากึ่งทดลอง (Integrating community and basic health unit services to strengthen routine immunization in Panjgur District Balochistan: A quasi experimental study) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: สถิรกร พงศ์พานิช, หน้า.

การให้วัคซีนยังคงเป็นความท้าทายที่สำคัญในปากีสถานและยังมีการรายงานถึงการเจ็บป่วยและการเสียชีวิตจำนวนมากจากโรคที่ป้องกันได้ด้วยวัคซีน ด้วยปัจจัยหลายด้านทั้งการมีรายได้จำกัด ประเด็นด้านจิตสังคม และอุปสรรคทางวัฒนธรรมคือปัจจัยที่อยู่เหนือการด้อยคุณภาพของการให้วัคซีน จากเหตุผลข้างต้น ปากีสถานจึงเป็นหนึ่งในประเทศที่ต้องเผชิญกับปัญหาในการให้บริการด้านสุขภาพพื้นฐานเรื่อยมา วิธีการ: งานวิจัยนี้เป็นงานวิจัยกึ่งทดลอง (Quasi-experimental) โดยมีกลุ่มควบคุมและกลุ่มทดลองซึ่งดำเนินการในกลุ่มประชากรบริเวณอ่างเก็บน้ำ Panjgur ซึ่งเป็นพื้นที่การให้บริการด้านสุขภาพพื้นฐานของรัฐบาล โดยการสัมภาษณ์บิดา/หัวหน้าครอบครัวที่ได้รับการสุ่มเลือกหลังจากการคำนวณขนาดกลุ่มตัวอย่าง (sample size) โดยหลังจากผู้เข้าร่วมลงนามในแบบฟอร์มยินยอม (consent form) แล้วจะได้รับแบบประเมินตนเองและแบบสอบถามที่มีเหตุผลและเชื่อถือได้ งานวิจัยนี้ได้ผ่านการพิจารณาจริยธรรมจาก Ethical Committee of Bridge Consultant Foundation of Pakistan ผลการทดลอง: หัวหน้าครอบครัวตัวแทน 243 ครอบครัว ที่เข้าร่วมงานวิจัยถูกสัมภาษณ์ระหว่างการสำรวจ พบว่าการให้บริการวัคซีนทั่วไปของทั้ง 2 กลุ่มไม่มีความแตกต่างอย่างมีนัยสำคัญ ($p = 0.33$) อย่างไรก็ตามข้อมูลพื้นฐานของประชากรเช่น รายได้ ระดับการศึกษา จำนวนสมาชิกในครอบครัว จำนวนบุตร จำนวนบุตรที่อายุต่ำกว่า 5 ปี และเพศของบุตร เมื่อเปรียบเทียบกับกลุ่มทดลองพบว่ามีความแตกต่างกันอย่างมีนัยสำคัญ ($p < 0.05$) จากการศึกษานี้ พบว่าความรู้บางส่วนและการให้วัคซีนทั่วไปยังไม่ครบถ้วนในกลุ่มเด็กอายุต่ำกว่า 5 ปี อย่างมีนัยสำคัญ ($p < 0.05$)

สาขาวิชา สาธารณสุขศาสตร์	ลายมือชื่อนิสิต ....
ปีการศึกษา 2558	ลายมือชื่อ อ.ที่ปรึกษาหลัก ....

5579153353 : MAJOR PUBLIC HEALTH

ZULFIQAR ALI: Integrating community and basic health unit services to strengthen routine immunization in Panjgur District Balochistan: A quasi experimental study. ADVISOR: ASSOC. PROF. SATHIRAKORN PONGPANICH, Ph.D., pp.

Immunization remains always a big challenge for Pakistan and the coverage has been reported significant low that results high morbidity, mortality reported due to vaccine preventable diseases. Multiple factors including financial constraints, psychosocial issue and cultural barrier are the predominant factors affects poor vaccination. Due to the above-mentioned reason the Pakistan is one of the countries, where the basic health services utilization faces many troubles and unutilized is familiar. Methods: This study was a quasi-experimental with control and intervention design and was conducted in primary Health care governmental Basic Health unit's catchment population of Panjgur by interviewing household head/ father who were selected randomly after the sample size calculation. Self-administered valid and reliable questionnaire were adapted after taking the written consent. Ethical consideration was taken from ethical committee of Bridge Consultant foundation of Pakistan. Results: Total 234 household head including fathers were interviewed during this baseline survey. Routine immunization Services utilization with in both Basic Health unit were not found statistically significant (p=0.33). However, the socio demographic information like income, level of education , Household members , Number of children , Under-five children and Sex of Children when compared with the practices were found statistically significant (p<0.05). Study observed partial knowledge and practice towards routine immunization as will low immunization status in under five children was found statistically significant (p<0.05).

Conclusions: Practices among routine immunization were not found up to the standards in these populations in the Catchment areas of Basic Health Units of Pakistan.

Field of Study: Public Health   Student's Signature ....

Academic Year: 2015   Advisor's Signature ....

ACKNOWLEDGEMENTS

CONTENTS

LIST OF FIGURES

LIST OF TABLES

จุฬาลงกรณ์มหาวิทยาลัย
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CHAPTER-I

INTRODUCTION

The Islamic Republic of Pakistan has celebrated 68 years of the independent day and the population has prattled from a 34 million in 1947 in the western wing to an expected population exceeded 180 million in 2011("Leaf-nosed bat," 2009). Health system strengthening and delivery of Health services remain main challenge in all over the country. And the country is a party of the Millennium development goals declaration and a stated intent to decrease maternal and child mortality("Leaf-nosed bat," 2009).The country has encountered various challenges over the last decade, including natural and man-made tragedies, as well as an uneven macroeconomic situation("Leaf-nosed bat," 2009).There is significant low coverage of immunizations which affected the morbidity, mortality and remain partly documented. Management and improvement partners' funds have, essentially, stayed unfocused to address the needs of those pretentious("Leaf-nosed bat," 2009).

1.1 Health Service Delivery in Pakistan

Pakistan has a widespread health care–deliverance structure consisting of a mix of both community and public sectors. Primary health care services are delivered through a network of basic health units (BHUs), sub health centers (5,310), rural health centers (561), maternal child health centers (879), and dispensaries (4,794). Secondary and tertiary care services are provided through *tehsil/taluka,* district, and teaching Populations (948) ("Leaf-nosed bat," 2009).In 78 districts (more than 50 percent of the districts in Pakistan), the BHUs utility as a public-private partnership understanding, managed by civil servants to rural support organizations (RSOs) under the Peoples Primary Healthcare Initiative (PPHI)("Leaf-nosed bat," 2009).

The public sector also provide preventive services in the course of vertical programs, for example, Expended program on immunization (EPI), TB Control Program using DOTS strategy (TB-DOTS), National Program for Family Planning and Primary Healthcare (commonly called LHWs Program), AIDS Control Program, Malaria Control

Program (through Roll-Back Strategy), Nutrition Program, and Reproductive Health Program: (managed Full by the federal level until 2001 and moderately until July 2011, since then completely by the provincial level)("Leaf-nosed bat," 2009). There is also a large system of medical practitioners and more or less 12,000 registered civil society organizations in the country providing an important proportion of primary health care services without any coordination among programs at first level care facilities (FLCF) ("Leaf-nosed bat," 2009).

1.2 Health indicators in Pakistan

The health summary of Pakistan is characterized by elevated population growth rate, elevated infant and child mortality rate, high maternal mortality ratio, and a double load of infectious and non-communicable diseases("Leaf-nosed bat," 2009). Malnutrition, diarrhea, acute respiratory illness, other communicable and vaccine preventable diseases are mainly responsible for a high burden of infant and prenatal mortality("Leaf-nosed bat," 2009).

1.3 Expended Program on Immunization in Pakistan

The Expended Program on Immunization EPI has existed since 1978 in Pakistan. The EPI currently aims to inoculate all children among 0 and 23 months alongside eight vaccine-preventable diseases that contain infant tuberculosis, poliomyelitis, diphtheria, pertussis, neonatal tetanus, hepatitis B, Haemophilus influenza type b (Hib), and measles("Leaf-nosed bat," 2009).

EPI services are provided most absolutely throughout the public health deliverance network through permanent centers and outreach services. Vaccinators manage the centers with support from lady health workers (LHWs), BHU and other Population staff; vaccinators manage some of the EPI centers in the Peoples Primary Healthcare Initiative (PPHI) managed basic health units with limited assistance from the BHU staff (Ayesh et al., 2010).Challenges in the provision of immunization services lie mainly at implementation level. There is still limited access to EPI services. Static EPI centers deliver immunization service to only 20 – 25% of the target children and outreach service delivery is the key mode to reach remaining targets("Leaf-nosed bat," 2009).

Most of the districts either don't have any outreach session micro plan or even if they have those are not updated or not implemented. Even the limited numbers of sessions, which take place irregularly, are not properly supervised and monitored (Ayesh et al., 2010). These sessions are usually held in the vicinity of the static centers instead of really far flung/deserving areas and therefore those areas far away from fixed centers are not covered or partially covered. Vaccinators and their managers are not accountable to anybody for not performing their duties. Static services are also often neglected. Still about one-third union councils of the country don't have any EPI static center("Leaf-nosed bat," 2009). One-quarter of the government health facilities don't provide EPI service. In addition, the provision of an extensive network of outreach sessions has resulted in an approach where many parents, especially in more remote communities wait for immunization to be brought to them, rather than actively seeking it. Since the outreach network is expensive and difficult to sustain it is clearly desirable to focus EPI predominantly onto fixed centers. A target was set to increase the number of static centers by 20% each year. While some new centers have been established in the past 5 years it is evident that this target has not been reached("Leaf-nosed bat," 2009).

1.4 Province of Balochistan

Balochistan is the largest province of Pakistan in terms of land area, comprising 44 percent of the national territory. It's in contrast, the smallest by far in terms of population. Only about 5 % of the country's Population lives here mainly in a few Population centers, while the rest live in scattered, sparsely populated settlements, around water sources amid an arid, inhospitable terrain. Balochistan Population was estimated at 6.6 million in the 1998 census, or about 5 percent of the national population("Leaf-nosed bat," 2009).

Infant and under-five mortality in Balochistan is estimated at 72 and 89 per 100 thousand live births respectively. Infant and under-five mortality is higher in rural compared with urban areas. Both mortality indices are higher where mother was uneducated or was in the poorest segment of the society. Forty percent of children aged less than six months are being exclusively breastfed. Only 10 % households in

Balochistan are using iodized salt ("Leaf-nosed bat," 2009).The use of iodized salt was relatively higher among urban and affluent households only 35 percent of children age 12-23 received BCG at birth before their first birthday. Polio-1 was administered to 61 %, 46 % for Polio-3. DPT- 1 was given to 24 percent children dropping to 12 percent for DPT-3. Hepb3 was reported for less than 7 percent children. Twenty-three percent children received measles vaccination. Overall, only two percent children age 12-23 months are being completely immunized by age 12 months and 4 percent at any time before the survey("Leaf-nosed bat," 2009).

In the light of the global commitment on millennium development goals, Balochistan is keen to achieve the national and international targets. The continued transmission of poliovirus in Pakistan including Balochistan is a disturbing situation and special measures have been put in place to deal with this outbreak. Recent sporadic measles outbreaks in Balochistan had posed another challenge for the EPI program ("Leaf-nosed bat," 2009).
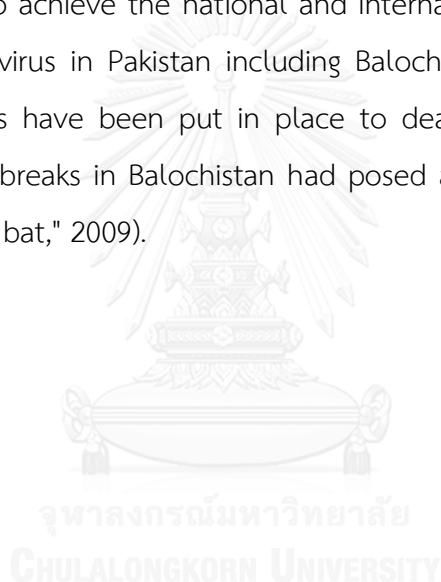
Figure 1: Map of Balochistan

1.5 Statement of Problem

By reviewing studies that assessed causes of low immunization specifically in Pakistan it was found that socio economic characteristic, awareness, access, and managerial issues have connection to low immunization coverage in the country (Ayesh et al., 2010; "Leaf-nosed bat," 2009).

To improve the primary health care services utilization through Community service model routine immunization in Balochistan, options include ensuring that vaccines and vaccinators are available at all times through a well-laid network of fixed centers. Further communities implementation should be made aware of these services at the fixed centers to achieve optimum utilization on immunization services. Leadership and good utilization should be nurtured through proper training. The province should look creatively at expanding the role of primary health care workers to assist in immunization coverage. Completeness and timeliness of reported routine data needs to be improved (Ayesh et al., 2010).

Low literacy rates especially among women, their lack of empowerment and involvement in decision making, early marriages, and high fertility rates with lack of birth spacing and poor access to health care facilities are all important proximal determinants of low immunization in children in Pakistan (Ayesh et al., 2010).

Addressing low immunization requires a clear, comprehensive strategy that includes governments, nongovernmental and community organizations, and the communities themselves. Maternal and paternal education came out clearly as a significant determinant shows that both male and female education is important to increase immunization rate in children (Ayesh et al., 2010).

1.6 Rational for the study

In Pakistan the Health care services has delivered through all tires of health care with a well-established infrastructure. Before 18th amendment health services were delivered under the umbrella of federal government and implantation remained responsibility of provincial health departments. Health policies in Pakistan are aimed to address the basic problems in health sector by strengthening the health care system (Ayesh et al., 2010).

However due to reasons of improper implementation and gaps in supervision these policies did not meet their objectives. Baluchistan is the largest province in Pakistan and especially suffering from underutilization of health services in the rural area (Ayesh et al., 2010).

The present health care delivery has not been able to cater the health care needs of majority of the people and leading to low confidence of the communities in the public health system. Instead they prefer to visit selective facilitation of their choice or go to private physicians' traditional healers and quacks. One of the main reasons of low health services system utilization in Baluchistan is unavailability of health care providers in the rural communities, although BHUs are staffed with medical officers and representative of vertical programs like lady health visitors midwives, vaccinator in the community providing preventive health services. Although health workers are providing preventive health services but not integrated health promotion activities, every vertical program is providing service separately through provincial representative (Ayesh et al., 2010).

Medical officers are one of the key well educated health personnel and can be used properly to administer preventive health services in the rural area and primary health care level through integrated health care services and community mobilization to strengthen the health care system at primary care level in rural areas, another reason for the low utilization and low performance is because of deficient supervision and monitoring of the supporting staff of vertical programs. Medical officer can supervise and mange integration of health services and community (Ayesh et al., 2010).

According to MICS Balochistan 2010 nearly 64 percent children had received at least one vaccination; the overall complete vaccination rate was only 4 percent for those who were vaccinated at any time before the survey and in the age group 12-23 months(Aatekah Owais, Asif Raza Khowaja, Syed Asad Ali, & Anita K.M. Zaidi, 2013b). The percentage of children, who were full vaccinated before their first birth day, was only 2 percent. With regard to polio and DPT vaccines, the rate for subsequent doses showed a declining trend Overall, complete immunization was slightly higher for female children. Highest rate of complete immunization was noted in Makran region

(7 percent) and lowest in Zhob region (0.5 percent). Children in urban areas were more likely to receive complete immunization compared to rural areas (10.4 versus 2.4percent) (MICS, 2011).

Barriers to universal immunization coverage include poor performance at primary health care level of the EPI, socioeconomic inequity in access to services, decreased demand from population, reduced security, and resistance to vaccines among population sub-groups. Recent conflicts and large-scale natural disasters have severely stressed the already constrained resources of the national EPI. Immunization programs remain least priority for provincial and many district governments in the country (MICS, 2011).

International and national studies have recommended different strategies to handle the worsening situation in the country which include Improving EPI service delivery, Integration of maternal-neonatal-child health and immunization programs and services under one directorate, Improving district level utilization capacity and accountability, Independent district level monitoring and evaluation, Increasing vaccine demand in the population   through targeted education, Mass communication for vaccine promotion, Involvement of Civil Society Organizations (CSOs) and other stakeholders (Aatekah Owais et al., 2013b).

The study has use the Community Service model under the leadership of medical officer /in charge BHU in the rural area, which intends to improve EPI services delivery, integration of maternal-neonatal-child health and immunization programs and services at BHU level, monitoring and evaluation at BHU level, increasing vaccine demand in the communities through targeted education on male, and involving local social networks and other stakeholders. The main objective of this study is to assess the effectiveness of Community Service model to improve health care services utilization at BHU level Panjgur (Ayesh et al., 2010).

1.7 Research Gap

In Pakistan and all over the world many studies have been conducted to Improving Vaccination Status of under Five Children through Health Education involving the

Household mothers, grandmothers and, Married females with or without children (Ayesh et al., 2010).

Another study shows that only females are not only responsible for proper routine immunization practice of under five children in rural population living the catchment areas of the basic health units (Ayesh et al., 2010).parents are the primary health decision makers for their children, their knowledge and practices regarding immunization in general have a great impact on the immunization status of their children(Orenstein, Atkinson, Mason, & Bernier, 1990; Szilagyi et al., 1994).

The huge amount of conflicting vaccine-safety information and misinformation in the Community can negatively influence parents' decisions (Zimmerman et al., 2005). Thus, there is a vital need to assess parents' knowledge and practice regarding their children immunization in order to improve and increase vaccination coverage and completeness. Much has been published about parents' knowledge and practices regarding childhood immunizations (Adhikari, Dhungel, Shrestha, & Khanal, 2006; Anjum et al., 2004; B. Shah, Sharma, & Vani, 1991). However, no studies have been reported to evaluate the knowledge and practices of Pakistani Household heads/Fathers to involving the basic health unit Staff with the leadership of Medical officer about under five children immunizations. Hence This Study was conducted to evaluate the knowledge and practices of Pakistani Household heads/Fathers to involving the basic health unit Staff with the leadership of Medical officer to increase the Routine Immunization coverage in under five children living in the catchment area of a Basic health Unit in Balochistan Pakistan.

1.8 Objectives

1.8.1 Primary Objective

To assess the effectiveness of Community Service Model to improve Routine immunization utilization at BHU level Panjgur District.

1.8.2 Specific Objectives

1. To determine the knowledge and practices regarding routine immunization among control and intervention groups before intervention at BHU level in Panjgur

2. To assess the change in knowledge and practices regarding routine immunization among control and intervention groups after the intervention

3. To assess the difference of routine immunization rate in children among control and intervention group at BHU level in Panjgur at baseline

4. To compare the difference of routine immunization rate between control and experiment groups after intervention

5. To come up with a modified policy evidence empowering medical officers and strengthen primary health care at BHU level

1.8.3 Research questions

1. What are knowledge and practices regarding routine immunization?

2. What is the difference of knowledge and practices regarding routine immunization before and after intervention among control and intervention groups?

3. What is the current utilization of routine immunization services at Panjgur district?

4. What is the difference of routine immunization rate between control and intervention groups after intervention?

1.9 Hypotheses

1.9.1 Null Hypothesis

There is no significant difference in Routine Immunization Coverage between intervention and control groups after CSM intervention on routine immunization in panjgur district.

1.9.2 Alternative Hypothesis

There is significant difference in Routine Immunization Coverage between control and intervention groups after the CSM Intervention on routine immunization in panjgur district.

INDEPENDENT VARIABLES	INTERVENTIONS	DEPENDENT VARIABLES
Predisposing Characteristics • Socio Demographic • Income • Education • Household members • Number of Children • Sex of Children • Number of under-five Children **Health Believes**	**Community Service Model (CS)M** - Health Education by BHU Medical officer/Team -Social Mobilization by BHU Medical officer/Team -Advocacy by BHU Medical officer/Team -Reminder vaccination	-Knowledge & practices among House Hold Head for Improving Adherence to Immunization Coverage of under-Five Children -immunization coverage at Health facility
Enabling Resources Accessibility and Support • Past immunization history • General satisfaction Communication, **Need** • Perceived • Evaluated		

Figure 2: Conceptual Frame Work

1.10 Operational definitions

1.10.1 CSM Model:

mean an intervention which aims was to increase the Knowledge & practices among Household Head/Fathers to Improved Adherence to Routine Immunization rate of under Five Children through Health Education, Social Mobilization, Advocacy, Reminder services and community and Basic Health Unit integration. Involving the Medical officer with Medical team in Basic Health Unit.

1.10.2 Socio-demographic variables

Socio-demographic variables included: income, education, household members, Number of children, number of under-five children of the respondents.

1.10.2.1 Income

Referrers the income of household head from all sources including wages, commissions, bonuses, social security, on which whole family members depend, has considered during the study.

1.10.2.2 Education

Means the level of education as reported according to the years of education defined by Education department of Pakistan. Five years of education will be considered as Primary education, 10 years education will be considered secondary education, 12 years education will be considered as college level education, 14-16 years will be considered as graduation level and more than 16 years education will be included in postgraduate level studies.

1.10.2.3 Household members

Means all those family members who are living in one house including father, mother, children, grandmother and grandfather.

1.10.2.3 Number of children

Means household have number of children under 15 years of age.

1.10.2.4 Under-five children

Means household have number of children under 5 years of age.

1.10.2.5 Sex of Children

Mean sex of children that influences on immunization of children ant differences in coverage favoring either boys or girls exist in socio-economic group.

1.10.3 Health beliefs

To explain what causes illness, how it can be cured or treated, and who should be involved in the process. The extent to which patients perceive patient education as having cultural relevance for them can have a profound effect on their reception to information provided and their willingness to use it.

1.10.4 Enabling Resources

Mean family support, access to health services, which are personal, family and community etc.

1.10.4.1 Accessibility

Refers to the distance from the respondents house to the BHU in kilometer mode of transportation, is it convenient or not and is the mode of transportation expensive or not.

1.10.4.2 Support

Means the support from family in term of information, encouragement, advice, and money and accompany Children to Routine immunization service.

1.10.5 past immunization history satisfaction

Means perceptions of the respondents towards general satisfactions towards Routine immunization service, technical quality of the service provider, interpersonal aspect of the provider with the respondent, communication between service provider and respondent, time spent with doctor and Access / Availability / continence of the Routine immunization service in Basic Health Unit.

1.10.6 General satisfaction Communication

Means a House hold head/fathers interaction between the Health Team Doctors/vaccinators /LHVs/LHWs.

1.10.7 Need

Need mean both perceived and actual need of Community for health care delivery services.

1.10.7.1 Perceived

Mean to Household head/Father aware of immunization, know the available facilities, or identify by mean of the senses

1.10.7.2 Evaluation

Mean to Household head/Father judgement or determine the significance of, worth, quality or assessment of routine immunization

1.10.8 Health education

Mean Health education of household head/fathers towards the Benefits of Routine Immunization to help them and communities to improve their health and routine immunization status, by increasing their knowledge. Parent education programs have as their goal to improve child immunization for educating and communicating with house hold head/fathers, especially about Routine immunization serveries which are available and free of cost in Basic health units of their catchment areas.

1.10.9 Social mobilization

Mean to motivate a wide range of partners and allies at local levels to raise awareness of and demand for a particular development objective through dialogue. Members of institutions, community networks, civic and religious groups and others work in a coordinated way to reach specific groups of people for dialogue with planned messages.

1.10.10 Lobbying

Mean to influence decisions made by officials in a government, most often legislators or members of regulatory agencies. Lobbying was done by many types of people, associations and organized groups, including individuals in the private sector, corporations, fellow legislators or government officials, and advocacy groups

1.10.11 Overcome Bureaucratic inertia

Mean To understand health managers' and service providers' views about routine immunization; perceived barriers and practical measures to improve the situation in the rural district of Panjgur Pakistan.

1.10.12 Reminder Services

Means that health team including lady health workers and community Health visitors who weekly visits the houses in intervention population for their routine activities will perform additionally this reminder service for routine Immunization .however ,vaccinators in intervention BHU has performed reminder call to household head fortnightly to remind regarding their Future Vaccination appointment of their children.

1.10.13 Knowledge

Means the information and understanding the parents have about the concept of Routine immunization, importance of Routine immunization, Schedule of Routine immunization, and available services.

1.10.14 Practice

Mean the respondent past experience with immunization for their children. Did they immunized their children at birth, from where did they go for their immunization service and if no what where the reason for not attending routine immunization Services. Means attending for the Routine immunization of their under five children in basic health unit according to the EPI Schedule.

1.10.15 Routine Immunization Coverage

Mean the percentage of complete immunized, partially immunized and non-Immunized status of under five children living in the catchment area of a Basic Health unit.

1.10.16 Health facility

Mean the Public sector Health Facilities which are providing routine immunization services to the under five children in primary health care level in basic health units and in secondary health care level in District hospital .

1.11 Benefits of the study:

As the proposed study is to assess the effectiveness of a CSM model, at the end of the study hopefully the model will effective and likely cover the following benefits:

1. The model will increase immunization coverage, which will prevent children from getting infection diseases in the panjgur District.

2. The policy makers can use the model as a tool to increase utilization of routine immunization services in all District of Balochistan

3. This model will help develop relationship between the community and the primary health care services utilization in Panjgur.

4. Further this will serve as an evidence for future research to increase routine immunization, services as well as increase Health care services utilization.

1.12 Summary of the Chapter

The Islamic Republic of Pakistan is 63 years old and the population has gushed from a 34 million in 1947 in the western wing to an expected population exceeded 180 million in 2011 (GOP, 2013). There is significant low coverage of immunizations which affected the morbidity, mortality and remain incompletely documented. In Most of the surveys it has been practically showed that the health care services consumption under control of Government of Pakistan is too low (Bassier-Paltoo, Monteiro, & Ramsammy, 2009). Due to the above-mentioned reason the Pakistan is one of the countries, where the basic health services utilization faces many troubles and unutilized is familiar.

The Human Development Report 2006 has mentioned that the literacy people in the nation are more the 50 percent. In this situation only the Health Education is a vital element of all the health programs by the Government through educating the communities and the public. Pakistan has a widespread health care–deliverance structure consisting of a mix of both community and public sectors. The public sectors also provide preventive services in the course of vertical programs.

The health summary of Pakistan is characterized by elevated population growth rate, elevated infant and child mortality rate, high maternal mortality ratio, and a double

load of infectious and non-communicable diseases. The expected coverage for a completely immunized child in Pakistan varies amid 56% to 88%, with considerable inequality among provinces. Balochistan is the largest province of Pakistan in terms of land area, comprising 44 percent of the national territory. It's in contrast, the smallest by far in terms of population. Only 35 percent of children age 12-23 received BCG at birth before their first birthday.

By reviewing studies that assessed causes of low immunization specifically in Pakistan it was found that socio economic characteristic, awareness, access, and managerial issues have connection to low immunization coverage in the country. Health policies in Pakistan are aimed to address the basic problems in health sector by strengthening the health care system (Bricker & Tollison, 2011).

CHAPTER- II

LITERATURE REVIEW

2.1 Immunization

The immunization is a process in which human body resistance has been developed by the administrating of a vaccine that Boost immune system and protect the person to infectious diseases. In 1974 WHO has established Expanded Program on Immunization (EPI) for to control of diphtheria, pertussis, tetanus, poliomyelitis, measles and tuberculosis immunization for every child throughout glob(Anjum et al., 2004). Initially program faced many problems including Lake of awareness, scope and seriousness of the targeted diseases. Issues faced by the program is to increasing the immunization and decreasing incidence of the target diseases are ineffective utilization; cold chain maintenance of the vaccines and lack of monitoring. When program was established less than 5 % coverage in developing countries were receiving vaccines in the 1st year of life. But these coverage levels have now increased 50 % in these countries and millions cases has been prevented by the target diseases (Keja, Chan, Hayden, & Henderson, 1988).

Around 2 to 3 million deaths have been averted annually by use of EPI from diphtheria, tetanus, pertussis (DPT) (whooping cough), and measles. Near about 107 million, which is the 83%, infant in the world were vaccinated of (DPT3) vaccines. 22.4 million Children in first year life did not receive (DPT3) vaccine in the world(Ahmad et al., 2011). The immunization could be improved through controlling the major obstacles that includes; health concern and technical, structural and demographic barriers (Bricker & Tollison, 2011; Ozawa & Stack, 2013) .

2.1.1 Benefits of immunization

Initially, Program has started vaccination against diphtheria, whooping cough, tetanus, measles, poliomyelitis and tuberculosis. However, international policies have been announced in 1977 that every newborn child must be vaccinated against all diseases

(Bricker & Tollison, 2011). In response, 85% of children less than 1 year age had received DTP vaccine (DTP3) with three doses by 2010. Developing countries, especially low income countries have also included hepatitis B and Haemophilus influenza type b (Hib) vaccine in program. However, pneumococcal conjugate vaccine and rotavirus vaccines are in process to include in near future with routine vaccine (Agha et al., 2007).

EPI has mandate in all countries to prevent new generation against all diseases and bring universal coverage. (Awadh et al., 2014). It has been proved that 99% poliomyelitis infections have been prevented since the launch of vaccination in 1988. Similarly, deaths due to measles has been decreased by 78% and eradication of maternal tetanus are another success story from more than twenty countries (Bricker & Tollison, 2011).

2.1.2 Vaccine Preventable Diseases

Routine vaccination has prevented lot of life since its start from 1974 worldwide (Bricker & Tollison, 2011). However, vaccine should meet up the standards of WHO policy before to purchase. Vaccine should be tested through randomized control trails in similar population and safety and immunogenicity testing will be done before to introduce in child.

2.2 Immunization in Pakistan

Pakistan has started immunization against child diseases in 1978 after primary health care Alma Ata declaration. EPI program had been launched since than against eight preventable diseases in children from 0-23 months. List of diseases with doses for immunization has been given can be seen in Table-1 (USAID, 2012). (Ahmad et al., 2011).

Table 1: Vaccines given in routine immunization in Pakistan

VACCINATION SCHEDULE		
Age	Vaccination	Schedule
At Birth	BCG + Polio 0	BCG + Polio 0
6 Weeks	DPT 1+HBV 1+Polio 1	Pentavalent +Polio 1
10 Weeks	DPT2 +HBV2 +Polio 2	Pentavalent +Polio 2
14 Weeks	DPT3+HBV3+Polio3	Pentavalent +Polio 3
9 Months	Measles	Measles
12-15 Months		Measles 2

Source: EPI Pakistan (Agha et al., 2007; Masud, Vinodhani, & Navaratneb, 2012).

Public sectors from basic health units to tertiary care level facilities are providing free of cost immunization services with the support of staff and vaccinators (Awadh et al., 2014). Tough there are few public health facilities in non-functional status due to multiple reasons like, HR, electricity issue, poor infrastructure, non-availability of ice liner and others (Anwar, Green, & Norris, 2012; Awadh et al., 2014; Pakistan, 2013). The National coverage of immunization in Pakistan ranges from 56%-88%. However, this number is not standard in all the provinces of Pakistan due to inequality among provinces (PDHS, PSLM)(Awadh et al., 2014). This difference is also because of antigen. This coverage is very far from regional countries like; Bangladesh and Sri Lanka and India (Aatekah Owais, Asif Raza Khowaja, Syed Asad Ali, & Anita K. M. Zaidi, 2013a).

Figure 3: Percentage of Full immunized children from 1995 to 2010 in Pakistan
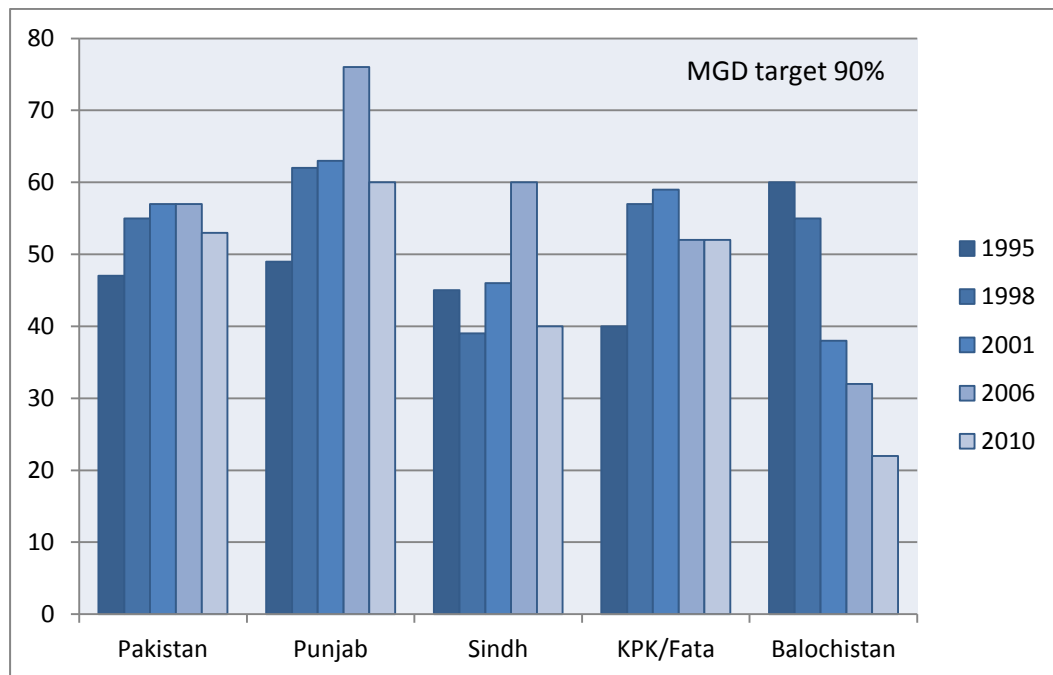
Source: Pakistan Integrated Health Survey 1995 & 1998, Expended Program on Immunization Cluster Survey 2001 & 2006, Pakistan Social and Living Standers Measurement Survey 2004-5 & 2009-10 (Bricker & Tollison, 2011; "Leaf-nosed bat," 2009).

Immunization services are mainly managed by the Expended Program on Immunization (EPI) with the support from Global Alliance for Vaccines and Immunizations (GAVI), the World Health Organization the Government of Pakistan's share was roughly 20% of the total funding.

Figure 4: Pakistan WHO and UNICEF estimates of immunization coverage by antigens
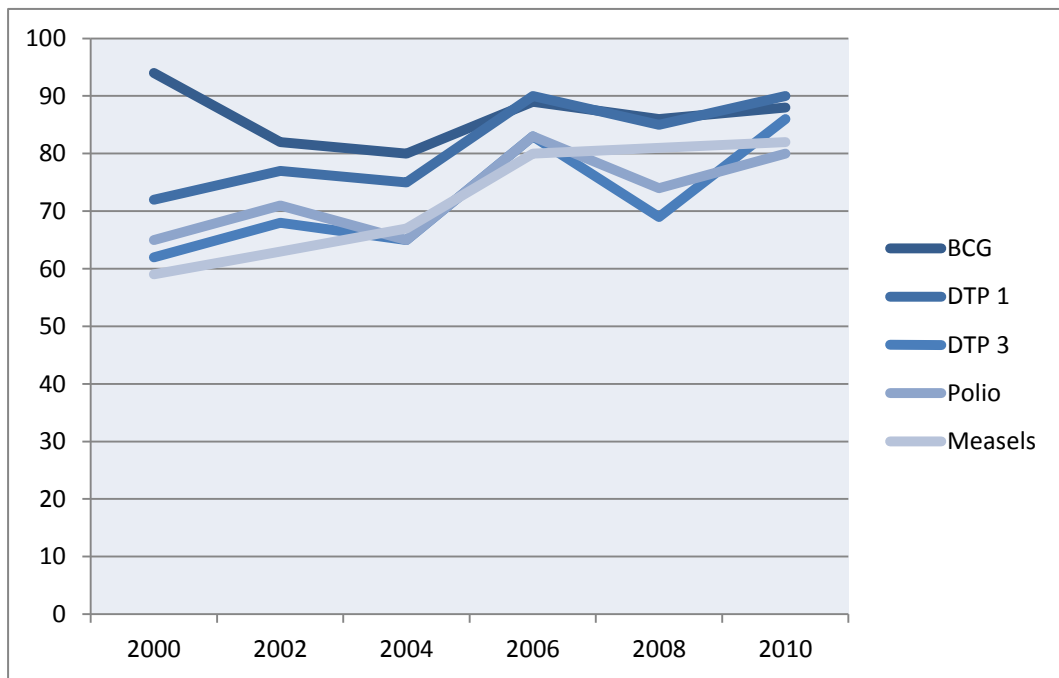
Source: Program on Immunization Cluster Survey 2001 & 2006, Pakistan Social and Living Standers Measurement Survey 2004-5, 2008& 2009-10 ("Leaf-nosed bat," 2009; MICS, 2011).

2.2.3 Immunization in Balochistan

According to table 5 In Balochistan 43 % of children were full immunized for all vaccines

Figure 5: Percentage of Full Immunized children of Balochistan and Pakistan from difference sources

Immunization in National and provincial	Source of Data				
%Of Full immunized Children	EPI CS 2001	PSLM 2004-5	EPI CES 2006	PDHS 2006-7	PSLM 2010
	N*	P*	N	P	N
	53	50	77	62	59

*N= national, *P= provincial

Sources: Expended Program on Immunization Cluster Survey 2001 & 2006, Demographic and Health Survey Pakistan 2006-7, Pakistan Social and Living Standers Measurement Survey 2004-5 & 2009-10 (BAJWA, 2011; "Leaf-nosed bat," 2009).

2.2.4 Percentage of Full immunized children in Balochistan and Pakistan

Figure 6 shows the decline of Full immunized percentage children from 60% to 42 % in 15 years from of in Balochistan.

Figure 6: Trend in percentage of Full immunized children in Balochistan and Pakistan from 2001 to 2011 by recall and record
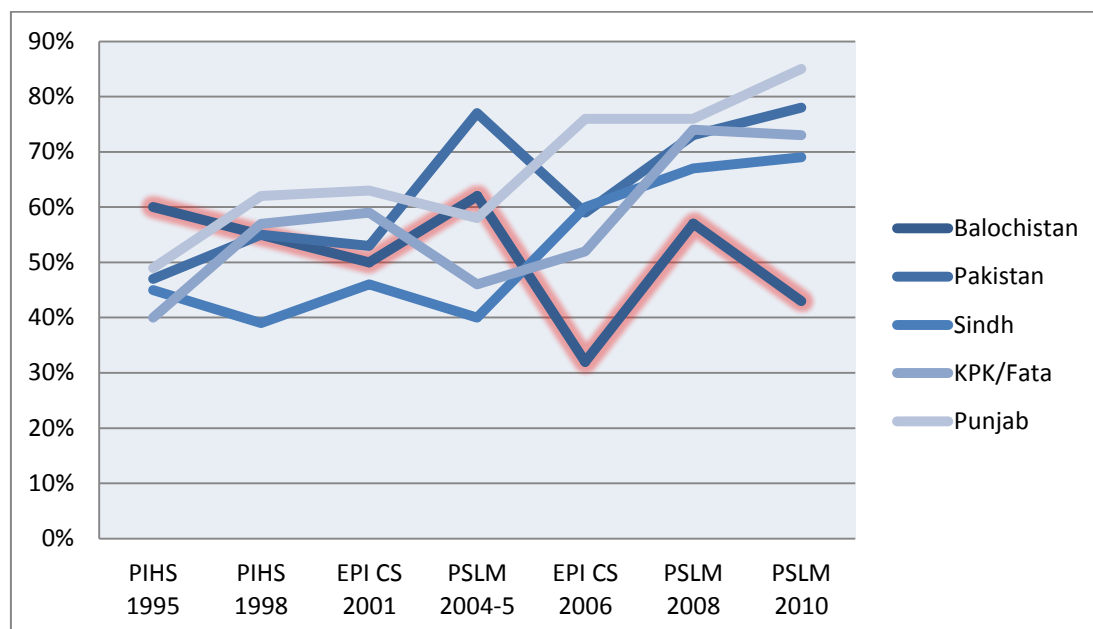
PIHS=Pakistan Integrated Household Survey

EPI=Expanded program on immunization Community Survey

PSLM= Pakistan Social and Living Standards Measurement

Source: Pakistan Integrated Health Survey 1995 & 1998, Expended Program on Immunization Cluster Survey 2001 & 2006, Pakistan Social and Living Standers Measurement Survey 2004-5 & 2009-10(Pakistan, 2013; PSLM, 2005).

2.2.5 Existing immunization structure in Balochistan

A provisional coordinator supported by technical and administrative staff currently heads the provisional EPI cell Quetta. Currently out of 86-sanctioned position, 77 are field. The EPI staffs in a district include District Superintended Vaccinator (DSV); Assistant superintended Vaccinator (ASV) and vaccinators as per number UCs, Facilities and needs. Vaccinators are posted at health facilities in Like DHQs, RHC, and BHU etc. All the BHUs have been handed over to people's primary healthcare initiative (PPHI)(Awadh et al., 2014). Planning for polio National Immunization Day (NID) is undertaken by the Prime Minister Polio control cell Islamabad in coordination with the WHO. UNICEF procures vaccines and delivery is through the federal EPI cell. The polio control room in the chief secretary's office is the epicenter of polio control

activities in Balochistan. The additional secretary development is the focal person for the EPI/PEI (polio eradication initiative). WHO provides technical assistance and funds for the campaigns while UNICEF undertakes social mobilization under COMNet for polio campaign in high risk UCs and of high-risk districts? At the level of the districts the coordination is through the Deputy Commissioner (DC) and District Health Officer (DHO) (Pakistan, 2013; USAID, 2012).

2.2.6 District EPI staffing and facilities in Balochistan

The total numbers of UC in Balochistan are 588. Number of UC having at least one functional EPI static center is 342 (58%). The total number of EPI static centers is 497 of which 76 (15%) is not functional due to various reasons. Majority of the non-functional sites are in killa Abdullah, Loralai, and Quetta(Awadh et al., 2014).

The total number of vaccinators is 943. The number of UCs having at least two vaccinators is 109 (18.5%). The means that level of rationalization is required to cover those UCs having no vaccinators. A total of 1176 vaccinators are required if every UC is have two vaccinators. The total number of District supervisors (DSV) are 25 while Assistant supervisors (ASVs) are 52. Five districts (Awaran, Bolan Chagai, Harnai, Washuk) out of thirty districts do not have DSvs. Harnai does not have any ASVs. Total number of LHWs s 6004(Awadh et al., 2014; Pakistan, 2013).

2.2.7 EPI Coverage by type of antigen

Regarding percentage of vaccines used for Vaccinations in children of Balochistan. From the table 8 only 16 % children on record are receiving OPV by viewing vaccination record, and by mothers reporting and record 40 % are receiving OPVs. For measles from record from vaccination care 23 %children are receiving the vaccines and by both record and recall by mother, 58 % children are receiving vaccines. There is drop in percentage of children receiving vaccines in Balochistan from PSLM 2004-5 to PSLM 2010-11 (PSLM, 2005).

Table 2: Types and percentage of vaccines being delivered to children of Balochistan

| Type of Vaccines | Health Surveys in Balochistan | | | | |
| | PSLM 2009-10 | | PDHS 2006-7 | PSLM 2004-5 | |
	% By Record	%By Record and Recall	% Both By Record and Recall	% By Record	% By Record and Recall
BCG	23	63	63	32	64
DPT 1	23	63	69	32	64
DPT 2	23	61	66	32	64
DPT 3	23	60	63	32	64
Polio 1	16	40	61	32	65
Polio 2	16	40	60	32	65
Polio 3	16	39	47	32	64
Measles	23	58	54	32	62

Sources: Pakistan Social and Living Standers Measurement Survey 2004-5 & 2009-10, Demographic and Health Survey Pakistan 2006-7 (PSLM, 2005) (PSLM, 2011) (PDHS, 2008).

2.2.8 Historical trends for full coverage in Balochistan

Figure 7 show the historical full coverage of immunization in Balochistan by Pakistan Social and Living Standards Measurement.

Figure 7: Historical trends for full coverage

HISTORICAL TRENDS FOR FULL COVERAGE (PSLM Data)
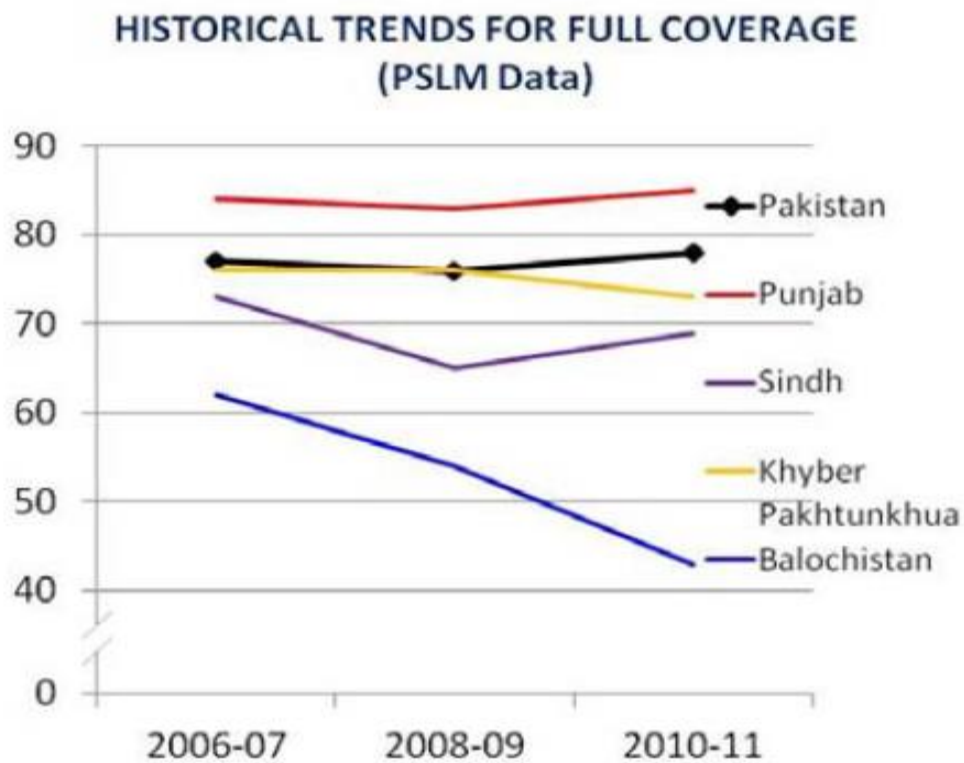
PSLM= Pakistan Social and Living Standards Measurement

Source:(Awadh et al., 2014; "Leaf-nosed bat," 2009)

2.2.9 Immunization in Districts of Balochistan

There are 30 districts in Balochistan. Capital city of Balochistan is Quetta city, which is located in Quetta district. According to PSLM 2010-11 lowest percentages of Full immunized children was reported in Khuzdar district 11 %. Highest percentage was reported in Ziarat district 76 %. Quetta district was reported as having the second high percentage of Full immunized children 74 %. There were three districts Awaran, Harnai and Sherani as being either not reported or zero percent immunization. Coverage by types of antigens in the districts of Balochistan can be seen in table 3 (Pakistan, 2013).

Table 3: District wise vaccine coverage by type of antigen 2012 reported by provisional EPI cell

#	Districts	BCG	OPV0	OPV1	OPV2	OPV3	P1	P2	P3	M1	M2
		%	%	%	%	%	%	%	%	%	%
1	Awaran	57	8	53	50	43	53	50	43	44	23
2	Barkhan	92	7	94	88	73	94	88	73	64	20
3	Bolan	77	4	82	77	76	82	77	76	77	32
4	Chaghi	94	7	100	33	77	100	33	77	82	24
5	Dera Bugti	39	12	36	26	24	36	26	24	16	1
6	Gwadar	77	49	30	73	77	80	73	77	75	63
7	Hernnai	100	4	100	100	99	100	100	99	63	56
8	Jaffarabad	100	56	100	90	91	100	90	91	100	39
9	Jhal Magsi	42	18	40	36	33	40	36	33	24	9
10	Kalat	53	13	51	44	35	51	44	35	31	12
11	Kech	55	50	100	95	93	100	55	58	92	49
12	Kharan	81	40	36	65	63	86	60	63	53	26
13	Khuzdar	40	11	41	35	23	41	35	28	24	9
14	K. Abdullha	21	3	20	12	10	20	12	10	16	5
15	K. Saifullah	100	9	100	100	100	100	100	100	100	86
16	Kohllu	73	6	34	75	69	84	75	69	35	11
17	Las Bella	92	43	93	59	37	93	89	87	77	29
18	Loralia	100	23	100	100	100	100	100	100	83	24
19	Musa Khail	76	7	81	80	86	81	80	86	36	28
20	Mustung	89	16	33	73	71	83	78	71	69	29
21	Nasirabad	100	41	92	73	73	92	78	73	63	24
22	Naushki	100	13	100	100	100	100	100	100	100	52
23	Panjgur	48	13	50	45	41	50	45	41	45	21

24	Pishin	30	7	30	25	23	30	25	23	22	5
25	Quetta	100	45	100	37	77	100	37	77	65	33
26	Sibbi	61	15	63	57	53	63	57	53	41	10
27	Sherani	100	8	100	100	100	100	100	100	100	100
28	Washuk	91	5	65	44	47	65	44	47	41	15
29	Zhob	82	15	90	50	85	90	90	85	77	23
30	Ziarat	66	13	73	63	64	73	63	64	56	25

Source: EPI regional office Quetta (Pakistan, 2013)

2.2.10 Percentages of Full immunized children

Figure 8 shows the Percentages of Full immunized children by record and recall in 30 districts of Balochistan by Pakistan Social and Living Standers Measurement Survey 2009-10

Figure 8: Percentages of Full immunized children by record and recall in 30 districts of Balochistan
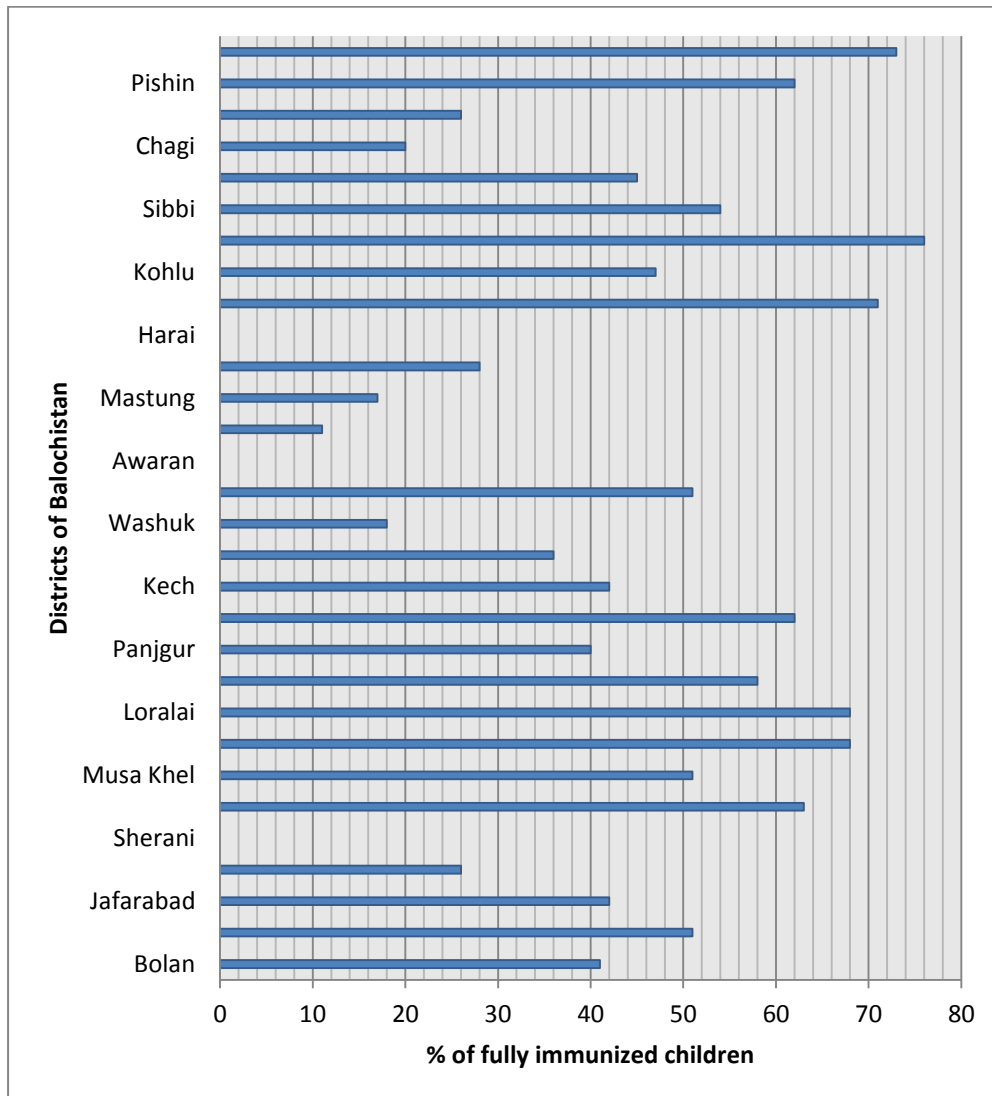
Source: Pakistan Social and Living Standers Measurement Survey 2009-10(Awadh et al., 2014)

2.2.11 Causes of Low immunization

As shown above Balochistan has low immunization coverage. Situation can be examined through primary and secondary data including routine reports, policy documents and other white literature available with department of health for different causes of low immunization(USAID, 2012). A total of 10 documents were reviewed for causes of low immunization. There were null published studies conducted in Balochistan, for causes of low immunization in children's(F. Shah et al., 2013).

2.2.12 Socio Demographic Characteristic and Immunization

According to the table 4, there is high percentage in children getting all vaccination in urban area compared to rural areas. There is not much difference in the sex of children getting fully vaccinated. Higher educated mother also have high percentage of Full immunized children and also children belonging to richest wealth quintile also are higher in percentage that are getting Fully immunized.

By type of vaccination, we find also difference in urban and rural areas and also in other characteristics of the population.

Table 4: Immunization according to demographic characteristics

	BCG	DPT 1	DPT 2	DTP 3	OPV 1	OPV 2	OPV 3	Measles	Non	All
Area										
Urban	52.2	40.1	36.7	24.5	67.9	63.8	54.3	33.9	28.4	10.4
Rural	29.4	18.9	16.9	8.8	59.6	54.4	43.8	19.9	38.5	2.4
Sex										
Male	35.0	22.1	19.9	12.2	61.5	56.7	45.9	22.8	36.3	3.5
Female	33.9	24.9	22.6	12.2	61.3	56.2	46.3	23.0	36.3	4.4
Mothers Education										
None	30.9	19.9	17.9	9.1	61.3	55.8	45.1	19.4	38.6	2.9
Matric	64.9	47.6	45.1	32.7	63.4	66.7	50.6	44.2	27.8	8.2
Higher	56.8	40.2	40.2	27.1	63.1	55.8	53.7	49.7	10.3	10.3
Wealth Index Quintiles										
Poorest	21.8	13.0	12.0	3.0	65.9	56.2	39.7	17.5	33.2	0.6
Second	34.2	19.2	17.3	10.8	61.8	59.4	48.4	17.8	35.8	2.0
Middle	28.3	20.6	19.1	11.8	51.1	46.0	37.2	22.3	47.2	4.4
Fourth	39.4	29.0	25.8	17.4	63.1	58.8	50.1	25.2	34.6	4.9
Richest	48.8	35.9	32.1	18.4	65.4	62.4	55.3	31.7	30.4	8.7

Source: Multiple Indicators Cluster Survey 2010 (MICS, 2011).

2.2.13 Primary health care services delivery in Balochistan

The Health Care system in Balochistan provides Health services delivery through BHUs and RHCs. The FLCF Provides following PHC services;

2.2.13.1 Outpatient curative care

- DOTS
- Treatment of Malaria
- Utilization of Diarrhea
- Utilization of ARI
- Delivery Care
- Newborn care
- Adolescent RH care
- Abortion Care
- Dental care

2.2.13.2 Inpatient curative care (RHCs only)

- General medical care
- Pediatric Care
- Emergency Care

2.2.13.3 Preventive/Promotion Services

- Antenatal Care
- Postnatal Care
- Growth Monitoring
- Expanded Program of Immunization (EPI)
- Family Planning Services
- Nutrition Rehabilitation Program
- Health Systems Profile- Pakistan Regional Health Systems Observatory-

- Counseling for Family planning, HIV/AIDS, Nutrition, Adolescent RH,

- Breastfeeding / weaning promotion, Malaria prevention,

2.2.13.4 Basic Emergency Obs Care (RHCs only)

2.2.13.5 Active Outreach (by facility staff)

- Family Planning

- Antenatal care

- Delivery care

- Postnatal care

- Nutrition Surveillance

- EPI

2.2.14 Basic Health Unit

In the Basic Health Unit the researcher and Medical officer from the Basic Health Unit in Charge was the key agent for monitoring of the CSM model intervention at the Basic Health Unit.

2.3 Study site District Panjgur

District panjgur is bounded on the north by Kharan district, on the east by Awaran district, on the south by Kech (formerly Turbat) district and on the west by Iran. District is spread on 16,891 square kilometers(Official Portal of Government of Balochistan, 2005) . District has 11 Basic Health Units (BHU), 3 sub health centers, 15 dispensaries and 4 Mother and Child Health Care Centers (MCHC). Secondary health care includes provision of specialized health services to cure major ailments at the District Headquarters Population (MICS, 2011). Moreover, indoor patient facility is available at the District Headquarters Population with a capacity of 42 beds. (MICS, 2011; Nishtar et al., 2010).

2.3.1 Administration of Health Services District Panjgur

In Panjgur, a District Health Officer is responsible for primary health care and related facilities like basic health units, dispensaries, and mother and child health care

centers. He is also responsible for EPI, school health service, Prime Ministers Program for Family Planning and Basic Health and Leprosy Control Centre. Secondary health care is provided at the District Headquarters population located at Chitkan. A Medical Superintendent is responsible for proper functioning of the District Headquarters Population. At present one dental surgeon, one general surgeon, one child specialist, 5 medical officers and one lady medical officer are posted at this population. Support staff includes 4 nurses and 54 paramedics.

2.3.2 Rationale of selecting District Panjgur

The health status is not satisfactory in Panjgur. Common prevalence of malaria, ARI and gastrointestinal diseases indicates a lack of preventive measures and an inefficient primary health care system. The health facilities are hardly available and there is a severe shortage of female health staff, either medical or paramedical. Presently, 3 out of 4 Mother and Child Health Care Centers in Panjgur are non-functional due to unavailability of female health staff. This not only results in their poor health but also increases the burden on secondary health care facilities. According to the District Headquarters population data, the number of patients has approximately doubled to a total of 58,101 in 1995 as compared with the figures for 1994, i.e., 26,470. Females constitute a majority of the patients but this situation seems reverse in case of indoor patients. Population bed occupancy rate exceeds 100 percent most of the times. This population is providing health services to patients from Iran as well, as the border is only 54 kilometers from Chitkan town (MICS, 2011) (Government, 2013).

2.4 Utilization of Health care

Health care system is often used synonymously to deliberate the care provided to the patients. BHU role in any health care system but most often fail to meet the genuine needs and expectations of the patients. The important role of the BHU can be conferred on the basis of outcomes, services and trust. The needed outcome against all the inputs is upholding the health and protecting from disability of the people. They are required to provide effective and efficient services to the patient(Aday & Andersen, 1974).

2.4.1 Predisposing characteristics

Andersen model proved that person could use the healthcare services once they accept these services socially, culturally and geographically that these all are in their favor. That is their inner thinking to use the health services which are beneficial for them (Sallis, Owen, & Fisher, 2008).

2.4.2 Enabling characteristics

Enabling principals usually depends on their families and community. In case of family means those who have resources and enough money to afford their health services. However, community support means that functional status of health facility located within their access.

2.4.3 Need based characteristics

Third principal is the requirement of an individual, whether they want to avail the health services or not. This need depends on their physical and clinical position of person as well (Aday & Andersen, 1974) (Wennberg & Gittelsohn, 1973).

| **<u>Predisposing Characteristics</u>** Demographic Social Structure Health belief | → | **<u>Enabling Resources</u>** Personal Family Community | → | **<u>Need</u>** Perceived Evaluated |
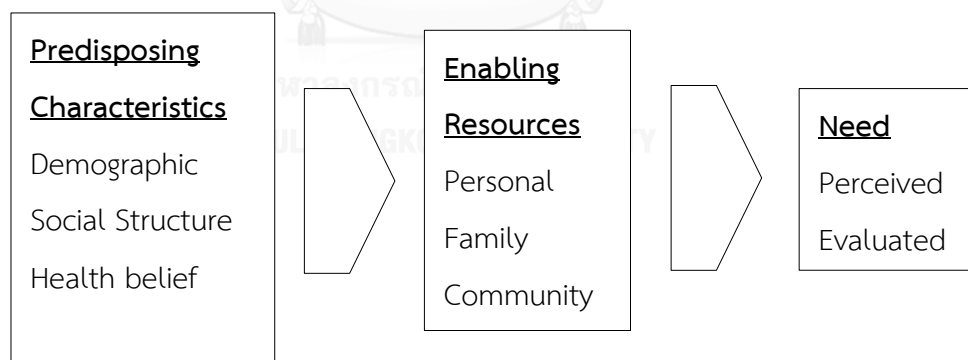
Figure 9: Utilization of Health Care Services

2.5 Literature review to improve routine immunization programs in developing countries

Very poor literature support is available especially in context of immunization coverage at primary health care level facilities in public sectors only. However, only 25 out of 11000 published literatures suggested that the projects at grass route level could improve the immunization status among the children living in developing countries. Furthermore, the quality of these research papers was big concerned to the public health researcher especially in methodological approach. Nonetheless, it has been suggested that routine immunization has always been supported with EPI program at basis health unit level facilities in low developing countries (Hutchins, Jansen, Robertson, Evans, & Kim-Farley, 1993).

It has been shown in this research that improvement in immunization could be increased after the completion of project activities. Though, the met analysis could be the best answer to check the effectiveness of the immunization at grass root level but none of the research we could not found during the intensive literature search. On these grounds, it is very hard to prove which strategies were most important. Besides, few interventions might be more thriving in definite social or health care settings than others. Traditional Birth Attendants (TBAs) is kind of supportive group that might help to increase coverage of vaccines at the birth of babies (i.e., BCG, DPT1). Community worker is another possible helper that can effect on the immunization coverage through voluntarily to motivate the parents on vaccination coverage (Ryman, Dietz, & Cairns, 2008). Researchers should appraise the enduring blow of the intervention; for better understanding for to continue the research activities have reviewed and published("Global routine vaccination coverage, 2011," 2012; Keja et al., 1988).

2.6 Proposed Areas of Additional Research

2.6.1 Integration and collaboration

- How realistic and gainful is it to incorporate other services with routine immunizations?

- In what conditions should include programs be understood?

- What are most favorable services or packages of services to incorporate with routine immunizations?

- Can an augmented role for private contributor and non-public sector organization strengthen routine immunization services?

- Can other groups (i.e. local service groups) be used to endorse routine immunizations by given that positive immunization messages and

- Be able to improve involvement of civil society organizations at each level also progress liability, service delivery and coverage?

- How superlative to work with cohorts to get better overall service delivery and thus toughen routine immunization services?

2.6.2 New Vaccine Introduction

- What is the obstacle to the start novel vaccines at community and competence level, and how can these be prevailing over?

3.6.3 Service Delivery

Vaccination services are incorporated with other health projects and new vaccines could be started in the field. Studies struggle to use meticulous scientific methods, for example by calculating minimum sample sizes based on clearly uttered statement, assessing other affecters, using control areas when suitable, using randomization to select intervention areas, and using statistical tests as indicated in data analysis. In addition, the findings of these studies should be broadly dispersed. Peer-reviewed research papers, studies can be scattered through committees and meetings.

Information attained from well performed scientific studies will be critical to assist program managers to execute activities to realize high reporting. These actions tied with the concentration being prearranged to the health systems move near supporter by the GAVI Alliance and other donors. Health vaccine could be more beneficial for the community till the re-invention of new affordable vaccine in the field. However, cost benefit analysis should be done before to introduce the new vaccine for greater impact. However, as the true blow of immunization depends mainly on the capability of programs to achieve their embattled personage exclusive of apparent local deliverance activity country will not be in a position to acquire full advantage of the impending for diminution of disease [32]. Through this literature review we could understand that the simple interventions with broad impact on immunization could have more demand from the community side. However, we have to keep in mind that the future activities and program should be designed cost effective and community acceptable.

2.7 Theories

Interventions designed on the theories related to behavioral change in an individual would definitely change in the immunization status positively. However, the relevant theories must be followed by the expert public health professionals (Fiese & Jones, 2012). Researcher use these theories after intensive literature review to respond different questions like when, why and how in the field of vaccination (Newes-Adeyi, Helitzer, Caulfield, & Bronner, 2000).Different hidden questions will easily be solved through focusing their behavior change. It has known that behavior change is very difficult task in any community. Improvement of immunization is totally due to the change in behavior of the community. Program evaluation and monitoring is totally based on relevant theories(Bandura, 1998).

2.7.1 The Ecological Perspective

 A Multilevel, Interactive Approach the ecological perspective determines the edge between aspects within and from corner to corner all levels of a health issues. This mainly because of an individual's mutual communication through physical and socio

cultural. Different two points are important like: first, behavior and individual behavior both affected by social environment (Fiese & Jones, 2012).

Table 5: Ecological Perspective

Concept	Definition
Intrapersonal Level	Individual characteristics that influence behavior, such as knowledge, attitudes, beliefs, and personality traits
Interpersonal Level	Interpersonal processes and primary groups, including family, friends, and peers that provide social identity, support, and role definition
Community Level Institutional Factors	Rules, regulations, policies, and informal structures, which may constrain or promote recommended behaviors
Community Factors	Social networks and norms, or standards, which exist as formal or informal among individuals, groups, and Organizations
Public Policy	Local, state, and federal policies and laws that regulate or support healthy actions and practices for disease prevention, early detection, control, and management

2.7.2 Interpersonal Level

In addition to investigate behavior, theories affecting on an individual focus on other factors. These other reasons include knowledge, attitudes, beliefs, motivation, self-concept, developmental history, previous exposure, and skills.

2.7.3 of Planned Behavior (TPB)

This theory is about the behavior and attitude of individuals. Behavior intent is the very important factors within these theories. The personal target to execute deeds is a mixture of thoughts near acting their conduct. The subjective attitude and behavior includes; Behavioral belief, evaluations of behavioral outcome, subjective norm, normative beliefs, and the motivation to comply (Conner & Armitage, 1998).

2.7.3.1 Purpose of Theory:

- To envisage and capture motivational persuade on behavior that is not under the subjective control.
- To identify how and where to target strategies for altering behavior.

An individual understand that the outcome from acting a behavior is positive; she/he will have a positive attitude forward performing that behavior. Negative could be conducted if their perception is wrong about that particular issue. However, positive act could bring the tings in positive way and improve the behavior towards the original target (Conner & Armitage, 1998)

Table 6: Interpersonal Levels

Concept	Definition	Measurement Approach
Behavioral intention	Perceived likelihood of performing behavior	Are you likely or unlikely to (perform the behavior)?
Attitude	Personal evaluation of the behavior	Do you see (the behavior) as good, neutral, or bad?
Subjective norm	Beliefs about whether key people approve or disapprove of the behavior; motivation to behave in a way that gains their approval	Do you agree or disagree that most people approve of/disapprove of (the behavior)?

2.7.4 Intrapersonal Level

At the interpersonal level, theories of health behavior presume subjective survive inside, and are prejudiced by, a social environment. The judgment, verdict, behavior, opinion, and maintain of the people nearby an individual control his or her feelings and behavior, and the individual has a reciprocal effect on those people. The social environment includes family members, coworkers, friends, health professionals, and

others. Because it affects behavior, the social environment also impacts health. Many theories focus at the interpersonal level, but this monograph highlights Social Cognitive Theory (SCT). SCT is one of the most frequently used and robust health behavior theories. It explores the reciprocal interactions of people and their environments, and the psychosocial determinants of health behavior.

2.7.5 Social Cognitive Theory (SCT)

Social Cognitive Theory (SCT) describes a dynamic, ongoing process in which personal factors, environmental factors, and human behavior exert influence upon each other. According to SCT, three main factors affect the likelihood that a person will change a health behavior: (1) self-efficacy, (2) goals, and (3) outcome expectancies. If individuals have a sense of personal agency or self-efficacy, they can change behaviors even when faced with obstacles. If they do not feel that they can exercise control over their health behavior, they are not motivated to act, or to persist through challenges(Basen-Engquist et al., 2011).

As a person adopts new behaviors, this causes changes in both the environment and in the person. Behavior is not simply a product of the environment and the person, and environment is not simply a product of the person and behavior(Khajehpour, Ghazvini, Memari, & Rahmani, 2011).

Table 7: Intrapersonal Levels

Concept	Definition	Potential change
Reciprocal determinism	The dynamic interaction of the person, behavior, and the environment in which the behavior is performed	Consider multiple ways to promote behavior change, including making adjustments to the environment or influencing personal attitudes
Behavioral capability	Knowledge and skill to perform a given behavior	Promote mastery learning through skills training
Expectations	Anticipated outcomes of a behavior	Model positive outcomes of healthful behavior
Self-efficacy	Confidence in one's ability to take action and overcome barriers	Approach behavior change in small steps to ensure success; be specific about the desired change
Observational learning (modeling)	Behavioral acquisition that occurs by watching the actions and outcomes of others' behavior	Offer credible role models who perform the targeted behavior
Reinforcements	Responses to a person's behavior that increase or decrease the likelihood of reoccurrence	Promote self-initiated rewards and incentives

CHAPTER- III

METHODOLOGY

This chapter describes the materials and methods that has been use in this study. These include study design, study site, study population and sample size, research instruments, content validity and reliability, data collection, data analysis, study process and ethical consideration. The purpose of the study is to increase adherence of patients towards routine immunization services as well as the primary Health service utilization.

3.1 Study design

The study design of the purposed study is a Quasi-Experimental. In this study population is the household who living in catchments areas of two different Basic Health Unit in District Panjgur. One BHU Tasp subjected to intervention, while the other BHU Esai was use as a control, which provided routine immunization services. The main outcome of the intervention (adherence to routine immunization services) will be obtained by comparing the two groups at the end of the study period.

A = O1   X   O2
B = O1   O2

A = Intervention group

B = Control Group

O1 = (Observation one) Baseline

O2 = (Observation 2) Follow up

X = Intervention
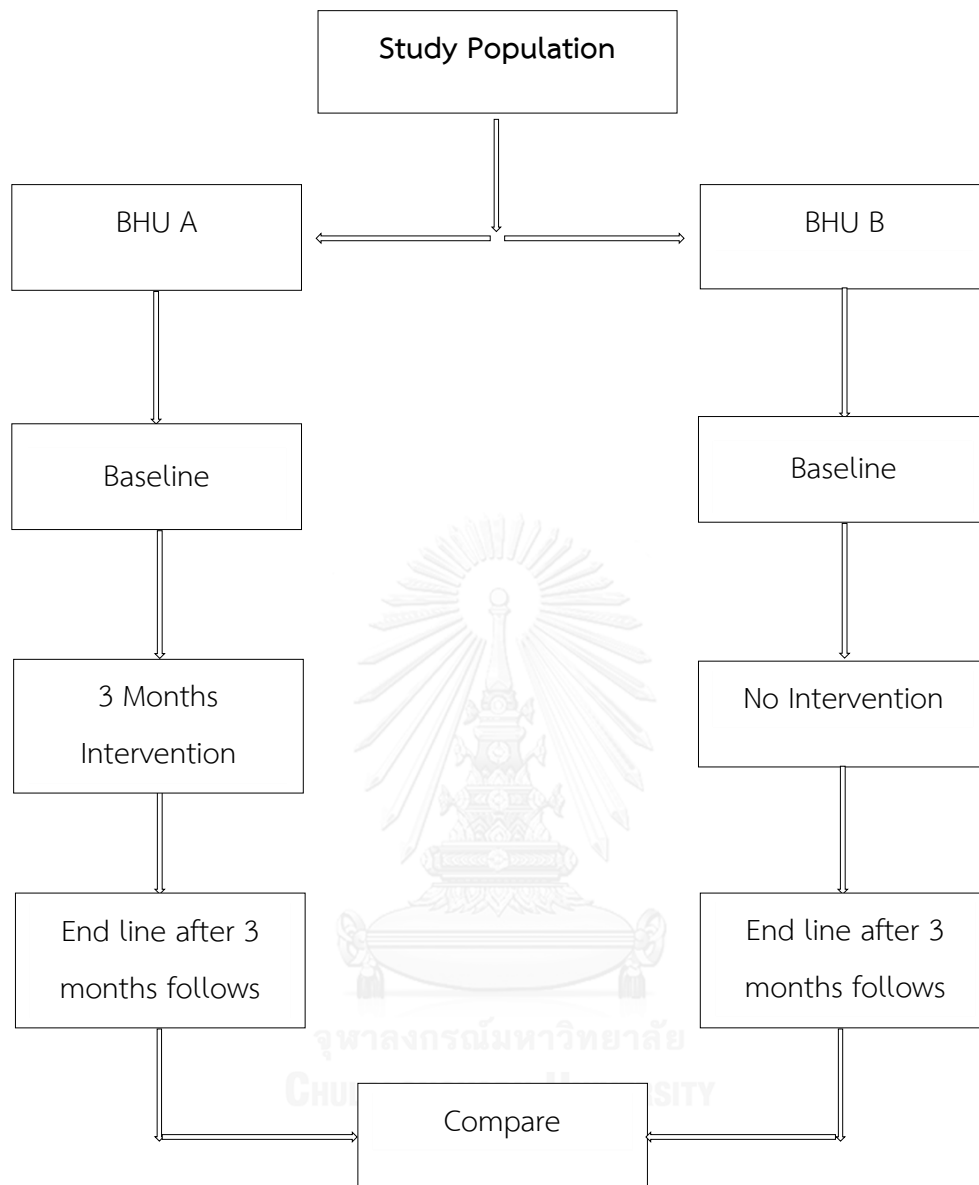
Figure 10: Schematic of the study design

3.2 Study Population

The study Population was the fathers/household heads of children under 5 years of age at the catchment area of Basic Health Unit Tasp Panjgur and Basic Health Unit Esai Panjgur. The sample size is selected based on the following criteria's:

3.2.1 Inclusion criteria

- Households having children under five years of age

- Subject who are local and resident of child at the catchment area of Basic Health Unit and living here for the past 1 year and before

- Fathers who are 18 or above

3.2.2 Exclusion criteria

- Subjects who are not able to participate in study due to severe physical or mental disability

- Subjects who refuse to participate in the study

3.3 Sample size calculation

The sample size calculation for the study was based on the effect size of the interventions by expecting the outcomes by using following formula (Chaiear et al., 2005).

$$n = \frac{2(Z_{\alpha/2} + Z_{\beta})^2 \, p(1-p)}{\Delta^2}$$

When:

P_T = the estimated proportion of immunization among cases whose prevalence should be increased after the intervention = 0.175

P_C = baseline proportion of immunization among controls before

Intervention= 0.96 (N Chaiear, et al., 2005(

Δ = the difference (effect size) which calculated from P_T - P_C

Z_{α} = 1.96 at α = 0.05, Z_{β} = 0.84 at β = 0.2)power 80%(

Sample Size Needed for each Group

When: P_T = 1.75 P_C = 0.96 (Chaiear et al., 2005)

$Z_{\alpha/2}$ = 1.96 at α = 0.05 Z_β = 0.84 at β = 0.2)power .80(,

P = $(P_T + P_C)/2$= 0.81 Δ = 0.3

n = $\underline{2)7.84)(.175)(.825)}$

(.15)

$\underline{2.2638}$ = 100.61 = 101

.0225

= 100.61 (+ 10% attrition) = 115

= 115 in each group

3.3.1 Sampling technique

District Panjgur is selected purposively because of low immunization coverage and feasibility for the researcher to conduct the research. The district has total two tehsils one Panjgur and one Gowargo. By the Random selection Tehsile panjgur was selected in intervention arm and tehsil Gowargo was in control arm. Tehsil Gowargo has total of two union councils and tehsil panjgur has total of three union councils.one union council Tasp for the intervention arm and one Union council Esai for control arm were randomly selected. All 10 villages' in union council Tasp and all 7 villages in union council Esai were included in the Study. The house numbers were unknown the convenient sampling taken till desired 234 sample size was reached in both end.

```
                        ┌──────────────────────────┐
                        │    District Panjgur      │
                        └──────────────────────────┘
                                    ║
                                    ▼
┌──────────────────┐      ┌──────────────┐      ┌──────────────────┐
│  Tehsil Panjgur  │◄═════│  2 Tehsils   │═════►│  Tehsil Gowargo  │
└──────────────────┘      └──────────────┘      └──────────────────┘
        ║                                                ║
        ▼                                                ▼
┌──────────────────┐                          ┌──────────────────┐
│   Total 3 UCs    │                          │   Total 2 UCs    │
└──────────────────┘                          └──────────────────┘
        ║ Random Selection        Random Selection ║
        ▼                                                ▼
┌──────────────┐      ┌──────────────────┐      ┌──────────────┐
│   Tasp UC    │◄═════│  Randomization   │═════►│   Esai UC    │
└──────────────┘      └──────────────────┘      └──────────────┘
        ║                                                ║
        ▼                                                ▼
┌──────────────────┐                          ┌──────────────────┐
│  All 10 villages │                          │  All 7 villages  │
└──────────────────┘                          └──────────────────┘
        ║ Convenient sampling   Convenient sampling ║
        ▼                                                ▼
┌──────────────────────┐                      ┌──────────────────────┐
│ House number unknown │                      │ House number unknown │
│ convenient sampling  │                      │ convenient sampling  │
│ till the sample the  │                      │ till the sample the  │
│ size                 │                      │ size                 │
└──────────────────────┘                      └──────────────────────┘
        ║                                                ║
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┌──────────────────┐                          ┌──────────────────────┐
│  117 Household   │                          │ 117 Household Control│
└──────────────────┘                          └──────────────────────┘
        ║                                                ║
        ▼                                                ▼
┌──────────────────┐                          ┌──────────────────┐
│    Answered      │                          │    Answered      │
│  Household/Head  │                          │  Household/Head  │
└──────────────────┘                          └──────────────────┘
        ║                                                ║
        ▼                                                ▼
┌──────────────────────┐                      ┌──────────────────────┐
│      Answered        │                      │      Answered        │
│ Household/Head Edline │                      │ Household/Head Edline │
└──────────────────────┘                      └──────────────────────┘
```

Figure 11: Sampling of the respondents for quantitative study

3.3.2 Research Instrument

A structured questionnaire was developed after an extensive literature Search. The original questionnaire was prepared in English language in order to maintain consistency with the questions adapted from the references with and without modifications. Additional questions were added to cover the objectives of this study. The questionnaire was translated into the Urdu language according to the recommended procedures and guidelines by Guillemin and Beaton (Beaton, Bombardier, Guillemin, & Ferraz, 2000; Guillemin, Bombardier, & Beaton, 1993). In the first step, two different translators of Health Education Department of Balochistan who speak both English and Urdu, but whose native language was Urdu, translated the questionnaire from English into Urdu. In order to enhance the quality of the translation, one of the two translators was familiar with the aims of the questionnaire in this study whereas the other was not. One of the researchers, who were Urdu, reviewed the two primary versions and compared them to the original; then, the first version of the questionnaire was prepared. The second step involved the reverse translation of the questionnaire from the first version of the Urdu questionnaire into English. The reverse translation was carried out by two other translators who were fluent in both English and Urdu but who did not know the aims of this questionnaire. The result of the reverse translation was compared to the original English questionnaire, and the second report was prepared. Repeated discussions between all of the translators and the researchers were carried out in order to ensure the accuracy of the questionnaire.

3.3.2.1 Socio demographic characteristic

This part is consisting of questions about socio-economic status of the parents such as income, education, family unit, ethnicity, number of children number of under 5 years age children.

3.3.2.2 Knowledge regarding Routine immunization

This part includes 13 main statements with total score of 13, 1 point for a correct answer and 0 point for an incorrect answer, and don't know. Knowledge is divided into two levels: high and low.

- Low knowledge = ≤ 8 (60%)

- High knowledge = ≥ 9-13 (70% - 100%)

Knowledge statements consisted of statements regarding importance of Health and routine immunization

3.3.2.3 Practice for routine immunization in under 5 children

This part included 5 questions asking about the routine immunization practices of under-five year's children, Choice of health facility to get child routine immunization, last dose of routine immunization, know where to get child Vaccination, choice to non-availability of vaccine at health facility help of immunization teams during the vaccination campaigns. For practice questions the scoring for yes was 1 point and was given 0 point and accordingly the marking were done for negative measurement. The obtained score was converted in terms of score level using the mean; Standard Deviation was classified as good or poor practices. High and low score for practices was applied.

3.3.3.4 Satisfaction among Household Heads

The satisfaction level of Household Heads were measured in end line due to the political, domestic and Departmental issues so far as. The Satisfaction portion was not included in the questioner at baseline. The Satisfaction portion of the questioner was completed by both groups after the intervention.

Satisfaction Questionnaire was used to measure the satisfaction related to routine immunization service. It aim was to measure satisfaction about the Health Staff who visits the home for routine immunization ,satisfaction with the performance of the vaccinator ,satisfaction with the large number of Polio campaigns that going on in the area. Satisfaction was measured in 3 categories very satisfaction, satisfied and not satisfaction with routine immunization. The distributions of response were compared

for each item. Total score were also derived by coding the response categories on a Scale from 0 for "Don't Know/not satisfied" to 1 for "satisfied" to 2 for "very satisfied "and then summing these values to produce a total for each section(Pound, Gompertz, & Ebrahim, 1993) .

3.3.3.5 Information about under five children

This part Included questions asking about their under five children their sex age Date of birth and about routine immunization by asking the availability of vaccination card, the youngest child was included in the survey

3.3.3.6 Immunization statues

The immunization status was checked by available of vaccination cards, presence of vaccination Scar mark on the child arm and asking regarding the routine immunization polio campaigns.

3.3.3.7 Reliability

Internal consistency

The reliability of the Knowledge and practice questionnaire was obtained through pre-test with 30 household in a Different BHU catchment area in Panjgur. Cronbach's alpha coefficient was used to calculate the reliability test consistency of the questionnaire. The mean ± standard deviation for the total knowledge score and total practice score were 7.63 ± 2.29 and 7.13 ± 2.20, respectively. Internal consistency was determined for the 13 items of knowledge on the questionnaire and 5 items of practice on the questionnaire with Cronbach's value of 0.739 and 0.732, respectively which indicate good reliability of both instruments.

Test-retest reliability

The investigation for the test-retest reliability with an interval of two weeks for twelve parents showed satisfactory reliability and stability with a Spearman's rank correlation coefficient value of 0.740 (p < 0.05).

3.3.3.8 Validity

Known-groups validity

The content validity is obtained by expert advice in the field including professors at Chulalongkorn and senior public health officers in Balochistan.

A known-group validity technique was used to determine the construct validity of the questionnaire by reviewing literature, adopting existing widely accepted behavior theory (health believe model, was used)(Awadh et al., 2014).

Face validity was measured with pilot testing of the questionnaire with household head/fathers similar to those of the sample area.

3.3.3.9 Data collection

After getting approval for the study from Bridge Consultants Foundation Pakistan, and provincial and district health department the researcher with the help of 10 research assistants at least with graduate qualification, after 3 days training workshop by the institute of public Health Quetta was approach the household heads to conduct baseline. Before conducting the survey an informed consent will provide with each questionnaire to the participants of the study. Furthermore each participant was informed that there is no financial benefit in participating in this study. The date collection was carried out before and after the intervention.

3.3.3.10 Statistical Analysis

Data was analyzed by using the Statistical Package for the Social Sciences (SPSS, v16). Data was entered into SPSS, coded, cleaned and locked before any analyses were made.

Descriptive statistics

For the descriptive analysis of independent variables in Socio-Demographic the income, household members, number of children and under five children was described in percentage, frequency ,mean and standard deviation and education and sex of under five children was described in frequency ,percentage.

The knowledge and practice and statues of immunization were described in frequency and percentage.

Inferential Statistics

The outcome of the study were increase of subjects adherence to Routine immunization coverage of under- five children at Basic Health units Inferential statistics like Pearson chi square tests or Fisher's exact test(when frequency value in any cell was 5 0r less) used to compare the difference at pre and post intervention assessment in both intervention and control group.

3.4 Study Process

The study comprises of three phases.

1. Phase 1 preparation

2. Phase II is the implementation process of CSM intervention

3. Phase III the monitoring of the model and the evaluation of the project.

3.4.1 Phase I Preparation

After passing the proposal exam from College of Public Health Sciences Chulalongkorn University the Permission to conduct the research was granted by the Secretary Health Balochistan. After getting permission from up most authority in health department of Balochistan, permission to conduct research in the BHUs was granted by the District Health officer of District Panjgur. Later on the provisional coordinators of EPI, & National Maternal Newborn and Child Health program (NMCH) was approached for the permission to use their community health workers (LHWs & LHVs) for the integration part of the intervention.

3.4.2 Team Building

A team was built for the process of implementation of the Community Service Model (CSM). The team will consists of four members including a Doctor, LHV, LHW and vaccinator working at the study site.

Another team consisting of 10 research assistants was trained for pre and post intervention survey will selected on the bases of qualification at having at least graduation and must be local resident of panjgur and know Balochi language.

3.4.3 Phase II Implementation

3.4.3.1 Workshops

5 days training workshop by the Master trainer form the institute of public Health Quetta were conducted to train for implementation of CSM intervention and to train research assistants for pre and post survey data collection. This included doctors, LHV, LHW, and supporting staff. The purpose of the workshop was project introduction. The training workshop was about the components of the Community Service Model (CSM); it's benefits and what the researcher plans to do. The training workshop was for three days for CSM implementation team and two days for data collectors. This training workshop was conducted at the BHU Tasp.

3.3.5 Responsibilities of CSM Team

The responsibilities include

    (i)   increasing focus on supervision, monitoring and evaluation,

    (ii)   considering performance-based incentives,

    (iii)   exploring partner ships with the private sector,

    (iv)   expediting polio eradication initiatives,

    (v)   improving utilization,

    (vi)   increasing targeted capacity development,

    (vii)   concentrating on the target age group for immunization,

    (viii) developing socially acceptable strategies,

    (ix)   developing a human resource strategy and implementation plan,

    (x)   Improving planning at the local level.

3.4.3.2 The Intervention: Community Service Model (CSM) Model

This model is directed at increasing under five children adherence to Routine Immunization services in a Basic health Unit (BHU) level setting.

1. Provide Focused RI to the Parents

2. Increase knowledge and awareness through RI Education

3. Improve service quality related to RI service

4. Integrating community and Basic Health Unit service through Health Staff

3.4.3.3 Focused on Routine Immunization

Immunization is the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine. Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease. The Expanded Program on Immunization (EPI) in Pakistan protects against eight vaccine-preventable diseases and immunizes children below 23 months of age (Masud et al., 2012).

During the last decade, EPI performance has been stagnant with only 40–60 percent of children receiving the vaccines age-appropriately. Vaccine preventable diseases are still a Major cause for the high infant and child mortality rates in Pakistan.

Evidence suggests that underachievement of the EPI is due to a combination of factors including; inadequate performance in the areas of service delivery, program utilization, monitoring and evaluation, logistics control, human resources utilization and financing, as well as community health-seeking behaviors and other demand-side issues.

An assessment of the EPI was conducted at the request of the Secretary of Health, Government of Pakistan from January to June 2011, by a group of independent local and international experts. The assessment provided recommendations to improve program performance in the short and medium terms within the context of the newly devolved health sector (Aatekah Owais et al., 2013a).

3.4.3.4 Education regarding Routine immunization services

Among household heads, the general purpose of Education is to provide them with essential information regarding Routine immunization services (Abu-Zeid & Dann, 1985). To be specific, the Education will help the parents for the child to stay healthy through advising them about health promotion and also to know the common symptoms of health risks that may affect their children without immunization (McLearn, Zuckerman, Parker, Yellowitz, & Kaplan-Sanoff, 1998).In addition, education was an entry point to hole the family, so they also know the potential risks encountered without immunization (Wallace, Dietz, & Cairns, 2009).

Parent education is a process of two-way interpersonal communication in which they have been informed about possible problems that the child may encounter without immunization, and make them own decisions about how to respond. When there is a two-way discussion with good understanding of each other, it not only helps the parents to know the possible problems that she may encounter and when to take appropriate action, but it also establishes a trusting relationship with the health personal. Additionally, such two-way communication helps the parents to feel more comfortable and freely express their worries and needs the education.

Table 8: Frame Work for Community Services Intervention

Strategy	method	output	Monitoring and evaluation
1.Health Education	Educating Household Head /Fathers By BHU Medical officer/Team	↑ KP and Routine immunization	Researcher By Observation Pre-post Data collection
1.1.Educating Household Head /Fathers	Community meetings arrange by identified community influential people	# of meetings held, and participation	Researcher and Medical officer Pre-post Data collection
1.1.1. Community Meetings	Knowledge transfer by usual methods	↑ KP and Routine immunization	Researcher and Medical officer Pre-post Data collation
2. Targeted Social Mobilization	Mobilize for support of intervention by targeted important groups.	Support to the intervention show of support	Researcher Observation
3. Community Communication	Community involvement by IEC Materials	Distribution of IEC Materials in the community, ↑immunization basic health records	Basic health records Researcher

3.1. IEC materials	Using existing IEC tested and approved materials	Increase immunization basic health records	Basic health records Researcher
4. Advocacy	Meetings with Gatekeepers sharing plans regarding intervention	To gain support of Gatekeepers.	Researcher Number of gatekeepers involve
5. Reminder Services	health team including lady health workers and community Health visitors who weekly visits the houses in intervention population for their routine activities will perform additionally this reminder service for routine Immunization .however ,vaccinators in intervention BHU has performed reminder call to	Regular visits Phone call made ↑ KP and Routine immunization coverage	Lady health Supervisor Lady Health workers Health visitors Vaccinator Research officer

	household head fortnightly to remind regarding their Future Vaccination appointment of their children.		
6. MO Involvement	Training of MOs and Public Health Medical Camps By these MOs	Medical Camps Conducted ↑ immunization basic health records	Medical Officer Basic health records Researcher Pre-post data collection
6.1 Public Health Medical Camps	One camp per month in the catchment area and camps focuses on public health intervention	Medical Camps Conducted	Researcher Medical Officer Numbers of camps observation

3.4.4 Phase III: Monitoring and Evaluation

Monitoring was done at two places at the Basic Health Unit and in the community. Main tool for monitoring has been observed and to fix issues.

3.4.4.1 Basic health Units

In the Basic health Units the researcher and Medical officer from the basic Health Unit In-charge were the key agents for monitoring of the CSM model intervention at the BHU

Responsible Person	Tasks
Medical Officer& Researcher	1. To monitor the team 2. ensure vaccine supply 3. Routine Immunization card 4. Supervise Data collection process

As the medical officer were working daily in the OPD they used to monitoring the regularity of the staff by checking the attendants register. The medical officer was also responsible for continues supply of Vaccines to the EPI center. At the end of the day medical officer with the researcher regularly check the registers for details of services provided through Immunization card. The questionnaire filled by the subjects was also checked daily for any issues.

3.4.4.2 Community

Researcher and two ladies health supervisor (LHS) were the key people in monitoring the community services.

Responsible Person	Tasks
Lady health supervisor & Researcher	1. Develop relation with community 2. Available community map 3. Communication 4. Perform activates assigned as per developed Model

Then LHS and the researcher went to the LHW and provided complete information and Immunization card. Then the LHW visited the home and reported back to the lady health supervisor with complete data. However, data quality was checked through surprised visit performed by lady health supervisor. If there were some issues the researcher was contacted by the concerned LHW through mobile phone.

CHAPTER- IV

RESULTS

The results included the analysis and interpretation of the data and analysis derived from 234 from a Population father of children under five years of age children who were head of the family of Panjgur Balochistan Pakistan. Two groups 'intervention and control pre and post data, study was used to assess the effectiveness of CSM model Intervention on change in knowledge and practices of Household Heads of children under 5 years of age towards the routine immunization. A structured questionnaire was used to collect the data for both baseline and follow-up survey. One BHU Tasp subjected to intervention, while the other Esai was use as a control, which provided routine immunization services. Eleven House Hold from intervention area and nine houses from control area were lost due to seasonal migration. However 214 household fathers were successfully followed. Therefor the response rate at the end of study was calculated as 91%. The results are presented in to two parts.

Part-1 presents the general and socio economic characteristic of the house hold income, level education ,family members ,number of children , number of under five children and Sex of Children in both intervention and control Populations has been evaluated and it has been shown that there was no any significant difference has been reported at the baseline within these socio-demographic characteristics. Association of Income, Education, knowledge and practices on Practice level of Full immunization in intervention and control group was also explored. There was no any significant difference has been reported at the baseline within Income, Education, knowledge level and practices on Practice level of Full immunization status.

Part-2 presents the results for the effectiveness of the CSM model. The effectiveness is assessed by the difference in Knowledge, practices and immunization Status of

children in house hold towards routine immunization who participated in intervention BHU as compared to the control BHU.

4.1 PART I: Descriptive findings

Descriptive findings were measured through the pre tested; validated piloted tool and following variables were measured.

- General and socio economic characteristics

- Knowledge on routine immunization

- Practices on routine immunization

- Immunization status

4.1.1 General and socio economic characteristics at Baseline

This part revealed the frequency distribution of selected variables describing the background of the household father before the intervention. The frequency of distribution for the selected variables of socio demographic characteristics including income, level of education ,number family members ,number of children, number of under five children and sex under five children. The socio demographic information like income (p= 0.798) level of education (p=0.753), Household members (p=0.890), Number of children (p=0.896), Under-five children (p=0.038) and Sex of Children (p=0.793) were not statistically significant different in both groups. Concerning the income of House hold fathers, nearly half 42.7% had income between 10000 to 20,000 Pakistan rupees per month, 17.9% had income less than 10,000 Pakistani rupees per month and 39.3% had income more than 20000 Pakistani rupees per month. More than half 55.5% of fathers had qualification of High School that is 10 years of education, 15.3% had graduation education that is 14 years of education, 4.2% had above graduation that is above 14 to 16 years while only 24.7% had no education and was found no significance difference with education of Household Heads. Regarding the house hold members 66.7 % of houses had more than five person per and 33.3% of houses had less than five members per house. Regarding number of children 48.7% had more the then 3 children and 51.3% had less more than 4 children. Regarding under-five children 96.6% household had one under five

children 3.4% had only two under-five children. Regarding sex 53.0% female and 47.0% male. The details shown in table 9.

Table 9: Socio-demographic characteristics of the participants at Baseline (n=234)

Variable name	Intervention		Control		Total		P-Value #
	N=117	(%)	N=117	(%)	N=234	(%)	
Income in PKR: *							0.798
≤ 10000	21	17.9%	19	16.2%	40	17.0%	
10001 to 20000	50	42.7%	47	40.1%	97	41.4%	
≥ 20001	46	39.3%	51	43.5%	97	41.4%	
Education**							0.753
No education	29	24.7%	34	29.0%	63	26.9%	
High School	65	55.5%	60	51.2%	125	53.4%	
Graduation	18	15.3%	20	17.0%	38	16.2%	
Above Graduation	5	4.2%	3	2.5%	8	3.4%	
Household members*							0.890
≤ 5	78	66.7%	77	65.8%	155	66.2%	
> 5	39	33.3%	40	34.2%	79	33.8%	
Mean ± SD	5.0769±1.90351		4.8547±1.75315				
Min and Max	3	11	3	9			
Number of children*							0.896
≤ 3	57	48.7%	58	49.6%	115	49.1%	
> 4	60	51.3%	59	50.4%	119	50.9%	
Mean ± SD	3.0769±1.88987		2.8291±1.71851				
Min and Max	1	9	1	7			

Under-five children**							0.038
1	113	96.6%	105	89.7%	218	93.2%	
2	4	3.4%	12	10.3%	16	6.8%	
Mean ± SD	1.0342±.18249		1.1026±.30469				
Min and Max	1	2	1	2			
Sex of Under-five children*							0.793
Male	55	47.0%	53	45.3%	108	46.2%	
Female	62	53.0%	64	54.7%	126	53.8%	

#Significant Level at p-value= .05 *Pearson Chi square test**Fisher Exact test for cells with value 5 or less

4.1.2 Immunization status at baseline

The table 10 shows the overall immunization status at baseline. the Full immunization status of under-five children in intervention group was 11.1% as compared to control group was 13.6%, for partial immunization status under-five children in intervention group was 86.3% as compared to control group was 79.4%, for the Un-Immunization status in intervention group was 2.6% as compared to control group was 6.8% at baseline. There were not statistically significant different found in immunization status of under-five children at baseline.

Table 10: Immunization status at Baseline

Variable name	Intervention		Control		P-Value
	N=117	(%)	N=117	(%)	#
Full Immunized*	13	11.1%	16	13.6%	0.552
Partially Immunized*	101	86.3%	93	79.4%	0.165
Un-Immunized**	3	2.6%	8	6.8%	0.075

#Significant Level at p-value= .05 *Pearson Chi square test**Fisher Exact test for cells with value 5 or less

4.2 Baseline Findings

4.2.1 Knowledge about Health and Routine immunization before intervention

Table 11 shows the frequency, percentages and significant level for the household Head on their level of knowledge Regarding general Health and routine immunization of under-five children. During baseline no any statistically significant difference has been found in their knowledge level.

Table 11: Correct answers of Knowledge of General health and Immunization among household fathers at Baseline

#	Statements	Intervention		Control		Total		P-
		N	(%)	N	(%)	N	(%)	Value
		117		117		234		#
Knowledge of Health in General*								
1	Opinion concerning child health	16	13.7%	15	12.8%	31	13.2%	0.847
2	Understanding of main health problems for under-five children	82	70.1%	85	72.6%	167	71.4%	0.664

3	Choice of treatment	33	28.2%	33	28.2%	66	28.2%	1.000
4	Reason child becomes unwell**	5	4.3%	11	9.4%	16	6.8%	0.120
5	Heard of immunization	89	76.1%	80	68.4%	169	72.2%	0.189
6	Know any disease eradicated from Pakistan	30	25.6%	30	25.6%	60	25.6%	1.000
Knowledge on Immunization*							
7	Prevention of vaccine preventable diseases	37	31.6%	36	30.8%	73	31.2%	0.888
8	Understanding of social factors	70	70.1%	75	70.6%	145	71.4%	0.664
9	Vaccine schedule for disease in Pakistan	106	90.6%	102	87.1%	223	95.3%	0.001
10	Role of vaccination for health	46	39.3%	45	38.5%	91	38.9%	0.893
11	Children with preventive diseases	22	18.8%	23	19.7%	45	19.2%	0.868
12	Gender difference in Vaccination	21	17.9%	15	12.8%	36	15.4%	0.277
13	Available Nearest	99	84.6%	101	86.3%	200	85.5%	0.711

	center							

#Significant Level at p-value= .05 *Pearson Chi square test**Fisher Exact test for cells with value 5 or less

4.2.2 Knowledge level in both groups at baseline

Self-administered questionnaire for household Heads with 13 questions were used to evaluate their knowledge at baseline. The score of 1 was given to each correct answer and 0 for incorrect answer.

The obtained score were then changed as per their score level and categorized in two levels low and high knowledge. The total score were ranged between 1-13, for high Level knowledge the range were between 9-13 and for low Level Knowledge the range were between 1-8 correct answers.

Table 12 shows that most of subjects, at baseline has low level of knowledge regarding general Health and routine immunization of under five children which is 84.6% in intervention group and 82.9% in control group, while in both group the high level of knowledge is very deprived where 15.3% was in intervention group and 17.0% in control group. During baseline no any statistically significant difference has been found in their knowledge level.

Table 12: Knowledge Level among the Subject at Baseline

Knowledge level*	Intervention group Pre n=117	Control group Pre n=117	P-value #
High level (9-13)	18(15.3%)	20(17.0%)	0.654
Low level (1-8)	99(84.6%)	97(82.9%)	

#Significant Level at p-value= .05 *Pearson Chi square test was applied

4.2.3 Practice regarding routine immunization at baseline

Table 13 shows the frequency, percentages and significant level for the household Head on their practices on routine immunization of under-five children. During baseline no any statistically significant difference has been found in their practices.

Table 13: Level of practices about routine immunization among house hold Head in intervention and control at Baseline.

#	Statements	Intervention		Control		Total		P-Value #
		N 117	(%)	N 117	(%)	N 234	(%)	
Practice on Immunization*								
1	Last Dose Source	37	31.6%	28	23.9%	65	27.8%	0.189
2	Know Vaccination place Missed children	30	25.6%	27	23.0%	57	24.3%	0.310
3	Choice of Health care Facility	74	63.2%	65	55.6%	139	59.4%	0.231
4	Option on Non availability of vaccine**	2	1.7%	2	1.7%	4	1.7%	1.000
5	Help of Vaccination team	100	8.55%	96	82.1%	196	83.8%	0.478

#Significant Level at p-value= .05 *Pearson Chi square test**Fisher Exact test for cells with value 5 or less

4.2.4 Overall Practice Level among the Subject at Baseline

For the practice of routine immunization the correct response score was given 1, while for incorrect response, the score was given 0. The score ranges from 1-5 and classified into poor and good practices, for Good practice the range were between 3-5 and for poor practice the range were between 1-2 correct answers.

The distribution, frequency and percentages at baseline for overall practices regarding routine immunization in table 14 Final scores obtained were calculated and assigned as poor and good practices accordingly.

Table 14: Overall Practice Level among the Subject at Baseline

Practice level*	Intervention group Pre n=117	Control group Pre n=117	P- value #
Good(3-5)	28(23.9%)	30(25.6%)	0.654
Poor (1-2)	89(76.0%)	87(74.3%)	

#Significant Level at p-value= .05 *Pearson Chi square test was applied

4.3 Associations at baseline

4.3.1 Association of Income and Education on Practice level of routine immunization in intervention and control group at baseline:

Table 15 shows the association of Income and Education on Practice level of routine immunization in intervention and control group at baseline; however it shows there was no any statistical significant association between the income and education of household heads practice level of routine immunization in both groups.

Table 15: Association of Income and Education on Practice level of ful
immunization in intervention and control group at baseline l

Variable name	Full immunization in Intervention n=117		P-Value #	Full immunization Control n=117		P-Value #
	Yes	No		Yes	No	
Income**						
≤ 10000	1(0.8%)	20(17.0%)	0.311	1(0.8%)	18(15.3%)	0.359
10001 to 20000	8(6.8%)	42(35.8%)		7(5.9%)	40(34.1%)	
≥ 20001	4(3.4%)	42(35.8%)		8(6.8%)	43(36.7%)	
Education**						
No education	3(2.5%)	26(22.2%)	0.373	3(2.5%)	31(26.4%)	0.686
High School	6(5.1%)	59(50.4%)		10(8.5%)	50(42.7%)	
Graduation	4(3.4%)	14(11.9%)		3(2.5%)	17(14.5%)	
Above Graduation	0(0%)	5(4.2%)		0(0%)	3(2.5%)	

#Significant Level at p-value= .05, **Fisher Exact test was applied

4.3.2 Association of knowledge and practice level on full immunization at baseline

Table 16 shows the association between full and partial immunized among children before the intervention; there was no statistical association between the knowledge and practice on routine immunization at baseline. The distribution, frequency and percentages for baseline and after 3 months intervention measurements were given for each question on practice for Final scores obtained were calculated and assigned as poor and good practices accordingly. The score for ranges from 1-5 and classified into two categories poor and good practices. Table 14 shows the number of subjects and their level of practices on routine immunization in both groups.

Table 16: Association of Knowledge on Routine Immunization in intervention group at baseline

Variable name	Full immunization in Intervention n=117		P-Value #	Full immunization Control n=117		P-Value #
	Yes	No		Yes	No	
Knowledge on Immunization**						
High	3(2.5%)	24(20.5%)	0.503	5(4.2%)	22(18.8%)	0.404
Low	10(8.5%)	80(68.3%)		11(9.4%)	79(67.5%)	
Practice on immunization**						
Good	2(1.7%)	15(12.8%)	0.406	3(2.5%)	14(11.9%)	0.606
Poor	11(9.4%)	89(76.0%)		13(11.1%)	87(74.3%)	

#Significant Level at p-value= .05, **Fisher Exact test was applied

4.4 PART 2: Post Intervention Findings and effectiveness of CSM

Comparing knowledge and practices about routine immunization within groups and across groups, before and after three months of interventions, assessed effectiveness of the CSM Model.

4.4.1 Knowledge of subjects regarding Routine immunization post intervention

Table 17 shows us the percentage of subject who answered correctly to knowledge items regarding Routine immunization.it shows us the percentage of subject who answered correctly to knowledge items concerning general health and routine immunization knowledge .the knowledge part of the questioner for the house hold fathers was consists 13 statements regarding the information of general health problems and routine immunization services of under five-children which are available in the Basic health unit.

Table 17: Number and Percentage of correct Answer of subject's knowledge of health in general and Routine Immunization pre and post intervention

statements		Intervention		Control		P-Value
		Pre n=117	Post n=106	Pre n=117	Post n=108	
Knowledge of Health in General*						0.000
1	Opinion concerning child health	16(13.7%)	44(41.5)%	15(12.8%)	11(10.1%)	
2	Understanding of main health problems for under-five children	82(70.1%)	100(94.3%)	85(72.6%)	78(72.2%)	
3	Choice of treatment	33(28.2%)	90(84.9%)	33(28.2%)	27(25.0%)	
4	Reason child becomes unwell**	5(4.3%)	70(66.0%)	11(9.4%)	8(7.4%)	
5	Heard of immunization	89(76.1%)	102(96.2%)	80(68.4%)	76(70.3%)	
6	Know any disease eradicated from Pakistan	30(25.6%)	79(74.5%)	30(25.6%)	21(19.4%)	
Knowledge on routine Immunization*						0.000
7	Prevention of vaccine preventable diseases	37(31.6%)	47(44.3%)	36(30.8%)	30(27.7%)	
8	Understanding of social factors	70(70.1%)	81(76.4%)	75(70.6%)	70(64.8%)	

9	Vaccine schedule for disease in Pakistan	106(90.6%)	101(95.2%)	102(87.1%)	92(85.1%)	
10	Role of vaccination for health	46(39.3%)	62(58.4%)	45(38.5%)	39(36.1%)	
11	Children with preventive diseases	22(18.8%)	37(34.9%)	23(19.7%)	23(21.2%)	
12	Gender difference in Vaccination	21(17.9%)	45(42.4%)	15(12.8%)	46(42.5%)	
13	Available Nearest center	99(84.6%)	102(96.2%)	101(86.3%)	100(92.5%)	

#Significant Level at p-value= .05 *Pearson Chi square test**Fisher Exact test for cells with value 5 or less

4.4.2 Knowledge level in both groups post intervention

Knowledge regarding routine immunization divided in to 2 levels low and high. Table 18 shows that most of subjects, before the intervention in household Heads in the intervention group had low knowledge however after the intervention 98 had high and 8 had low level of knowledge .there were 13 statements in knowledge section the score for High level were 9-13 above the (70%) and for low level knowledge was 1-8 less the (60%).In the control group of both household Head were observed that there were no change in knowledge have been reported and the number of subjects who had high knowledge remained same. There is statistically significant adherence between intervention and control group after intervention.

Table 18: Knowledge level change among the subjects in pre and post intervention

Knowledge level*	Intervention group		Control group		P-value #
	Pre n=117	Post n=106	Post n=117	Post n=108	<0.001
High level (9-13)	18(15.3%)	98 (92.4%)	20(17.0%)	19(17.5%)	
Low level (1-8)	99(84.6%)	8(7.54%)	97(82.9%)	89(82.4%)	

#Significant Level at p-value= .05 *Pearson Chi square test was applied

4.4.3 Practices of subjects regarding routine immunization post intervention

Table 19 represents regarding practices concerning routine immunization of under five children, For the Last does of immunization in intervention group after intervention was 69.2% as compared to control group after intervention was 33.3%.Knowing the vaccination places in intervention group after intervention was 86.3% as compared to control group after intervention was 75.2% Choice of Health care Facility in intervention group after intervention was 88.9% as compared to control group after intervention was 58.1% Option on Non availability of vaccine in intervention group after intervention was 2.6% as compared to control group after intervention was 1.7% Help of Vaccination team vaccine in intervention group after intervention was 98.3% as compared to control group after intervention was 22.2%. There is statistically significant adherence between intervention and control group after intervention.

Table 19: practices of subjects regarding routine immunization pre & post intervention

#	practice statement	Intervention group		Control group		P-value #
	Practice*	Pre n=117	Post n=106	Pre n=117	Post n=108	<0.001
1	Last Dose of any immunization	37(31.6%)	74(69.8%)	28(23.9%)	36(33.3%)	
2	Know Vaccination place Missed children	30(25.6%)	92(86.7%)	27(23.0%)	31(28.7%)	
3	Choice of Health care Facility	74(63.2%)	94(88.6%)	65(55.6%)	63(58.3%)	
4	Option on Non availability of vaccine**	2(1.7%)	88(83.0%)	2(1.7%)	4(3.7%)	
5	Help of Vaccination team	100(8.55%)	104(98.1%)	96(82.1%)	24(22.2%)	

#Significant Level at p-value= .05 *Pearson Chi square test**Fisher Exact test for cells with value 5 or less

4.4.4 Practices among the subjects with significance in pre and post intervention

Effectiveness Practices of routine immunization were divided in two levels poor and good practices. Good Practices in intervention group after intervention was 64.1% as compared to control group after intervention was 20.3%. Poor practices in

intervention group after intervention was 35.8% as compared to control group after intervention was 79.6%.Table 20 shows that most of subjects before the intervention in the intervention group had poor practices however after the intervention had good practices. In the control were observed that there was no any change in good practices has been reported. It was found both groups are statistically significantly different.

Table 20: Practices change among the subjects with significance in pre and post intervention

Practices level*	Intervention group		Control group		P-value #
	Pre n=117	Post n=106	Pre n=117	Post n=108	<0.001
Good(3-5)	28(23.9%)	68(64.1%)	30(25.6%)	22(20.3%)	
Poor (1-2)	89(76.0%)	38(35.8%)	87(74.3%)	86(79.6%)	

#Significant Level at p-value= .05 *Pearson Chi square test was applied

4.4.5 Level of Satisfaction among households fathers at (post intervention).

Satisfaction with routine immunization services was measured with 3 statements each statement had 3 responses very satisfied (VS), Satisfied (S) and not Satisfied (NS) in both groups at post intervention.

Table 21 shows the level of satisfaction which was measured after the intervention in three domains including their opinion about the Health Staff who come to vaccinate the children in the Basic Health unit, satisfaction with the performance of the vaccinator and large number of Polio campaign that's are going in their area. Regarding health staff performance the very satisfaction level in the intervention group was 54.7% as compared to control group was 4.6%, for the Vaccinator Performance the very satisfaction level in intervention group was 74.0 % as compared to control group after intervention was 23.1%, for the large number of Polio campaign the very satisfaction level in the intervention group was 54.7% as

compared to control group after intervention was 34.2%.It was found difference between two groups were statistically significantly different with p values <0.001

Table 21: Level of Satisfaction among households fathers (after intervention).

Satisfaction**	Intervention N=106			Control N=108			P-Value #
	Very Satisfied	Satisfied	Not satisfied	Very Satisfied	Satisfied	Not satisfied	
	(%)	(%)	(%)	(%)	(%)	(%)	
Health Staff Performance	54.7%	36.7%	8.5%	4.6%	41.6%	53.7%	<0.001
Vaccinator Performance	74.5%	20.7%	4.7%	23.1%	37.9%	38.8%	
Large Number of Polio campaigns	54.7%	44.3%	0.9%	34.2%	56.4%	9.2%	

#Significant Level at p-value= .05 **Fisher Exact test was applied

4.4.6 Overall immunization status after intervention

The table 22 shows the overall immunization status after intervention where 9.4% dropout rate were in Intervention Group and 7.6% dropout rate were in Intervention Group .Full immunizations status in intervention group was 89.6% as compared to control group after intervention was 13.8%, for partial immunization status in intervention group after intervention was 10.3% as compared to control group after intervention was 79.6%, for the Un-Immunization status in intervention group after intervention was 0% as compared to control group after intervention was 6.4 %.It was found both groups were statistically significantly different with p values <0.001.

Table 22: Overall immunization status after intervention

# Immunization status statement	Intervention group		Control group		P-Value #
Immunization status	Pre n=117	post n=106	pre n=117	post n=108	<0.001
Full Immunized*	13(11.1%)	95(89.6%)	16(13.6%)	15(13.8%)	
Partially Immunized*	101(86.3%)	11(10.3%)	93(79.4%)	86(79.6%)	
Un-Immunized**	3(2.6%)	0(0%)	8(6.8%)	7(6.4%)	

#Significant Level at p-value= .05 *Pearson Chi square test**Fisher Exact test for

cells with value 5 or less

CHAPTER-V

DISCUSSION

This chapter explained the study findings from the research questions and generated hypothesis. This discussion part is mainly depended on the published research and evidence based findings and theoretical support on routine immunization utilization. Conclusion has been mentioned in the light of research findings from our interventional study and recommendations with limitation have also been utilization discussed for the future researchers, further relevant activities and policy implications in the field of routine immunization utilization. Firstly we have discussed the background of this study and the reason why we had conducted this study.

Immunization has saved over 20 million lives in the last two decades, and currently averts more than 2.0 million deaths every year in all age groups, but could save more than double that; middle-income countries could be left behind in decade of vaccines (Levine et al., 2011; WHO., 2010). The global immunization coverage for DTP3 among children aged <12 months in 2012 was 83%. Polio 3 doses (Polio3) and measles containing vaccine (MCV) or Measles Mumps Rubella (MMR) were 84%, and 84%, respectively. Out of 22.6 million children who didn't receive 3 doses DTP or DTP3, 72% reside in 10 developing countries("Global routine vaccination coverage, 2011," 2012). The goal is to reach > 90% coverage for all countries. The regular impediment found rendering developing countries to achieve >90% coverage are; week health systems, isolated rural areas without easy access to health facilities, living in poor, densely populated urban areas and informal settlements, or among displaced populations during conflicts and wars, lack of information and understanding about the importance of vaccines and immunization especially among the poorest populations, fear of immunization fanned by reports of adverse events that are rumored or suspected of being related to vaccines (Ozawa & Stack, 2013; Rainey et al., 2011; WHO, UNICEF, & Bank., 2009). Dealing with these barriers, researchers and policy makers have applied different types of public health

interventions in developing countries. In Pakistan, there has been some improvement in the health care system over the years. However it is ironic that the health care settings, which restore and maintain community health, are also threatening their well-being. Every Population and clinic, no matter what size, is intended to be a place of healing and is supposed to safeguard the health of community. The objective of this study was to assess the effectiveness of CSM model intervention on house hold fathers regarding routine immunization utilization in primary health care level. This was a quasi-experimental, control and intervention group with two groups' pre and post. A total of 234 subjects participated in this study during the baseline survey in both Populations. Two groups' pre and post data, study was used to assess the effectiveness of CSM model Intervention on, change in knowledge and practices towards the routine immunization utilization. A structured questionnaire was used to collect the data the follow-up survey was conducted. The house hold fathers who didn't attended the interventional sessions were traced through their mobile phone by the data collectors. Eleven House hold fathers from intervention Population and nine House hold fathers from control Population were lost due to seasonal migration, refusal and other domestic problems at their home. However 214 House hold fathers from 234 House hold fathers were successfully followed. However the response rate at the end of study was calculated as 91%.

5.1 Pre-interventional characteristics

234 number of the Household fathers participated in the study 117 in control and 117 in intervention end. The Populations were belonging to young and middle age group and there were no any statistically difference in the age has been shown with in two groups. It was found that majority of the House hold fathers were working in private sector which participated in the study. There were no any significant difference has been found between the occupation and groups. Above one third of House hold fathers had qualification of high and graduation education and was found no significance with education of House hold fathers. Concerning the income of House hold fathers, nearly half had income between 10,000 to 20,000 Pakistan

rupees per month. There was no any significant difference was shown between the income and groups.

The control BHU is located in South part of the District and intervention BHU is located in north part of District both providing Primary Health care services to the covered population. This study has found the similar socio-demographic information during survey.

A Baloch Perspective Doctor Naseer Dashti describes that the health seeking process among Baloch people begins with diagnosis at home by family members and problems are settled during family meetings that address all other family affairs. Family friends and neighbors also play an important role(Dashti, 2007) .

5.2 Effectiveness of the CSM Model

The CSM Model has four approaches, health education of house hold father social mobilization through community development group facilitation targeted mass communication and medical camps, lobbying ,political organization and activism overcoming Bureaucratic inertia and reminder services for to improve the knowledge, and practices of House hold fathers regarding the routine immunization utilization. We have discussed these components combined with the CSM Model to compare the literature regarding effectiveness of this model as below:

This study observed that knowledge and practices towards routine immunization among under five children was partial in both setting. There are some important gaps need to be strengthened especially in rural setting. The results of study indicate that there is lack of understanding about routine immunization among study participants. Thus there is need of critical level of public awareness in district Panjgur, especially among Father of child under 5 years to decrease burden of preventable diseases. Similar studies shows that the immunization of child under 5 years of age was very poor and needs education intervention for to rapid improve the coverage (Anjum et al., 2004). Other studies were also in the opinion that low literacy was found as big constraints for the poor immunization status in rural community. The household education is more important for betterment of good health of their child and to understand the importance of vaccination for their kids (Northrop-Clewes, Ahmad,

Paracha, & Thurnham, 1998). Extensive health education campaigns about routine immunization are beneficial for fathers House hold Head, particularly to residents of urban and rural areas. The overall immunization coverage was found to be low. Hence, to increase the immunization coverage and reduce the incidences of missed opportunity, utilization of health services in the primer Health care level should be promoted, the outreach activities of the Basic Health unit should be strengthened and greater utilization of health services by community should be encouraged. A prospective community-based intervention study from Karachi Pakistan had also proved that health education for mothers of child would positively improve the health of vaccination coverage of child by building their knowledge about health (Agboatwalla & Akram, 1997). The current study sought to evaluate knowledge and practice of population and Immunization Status of under-five children. Result of this study observed partial knowledge and practice towards routine immunization. One Study with similar findings shows that without improving education level of females in rural communities, it would be difficult to educate and empower the first care provider of child. However, as an interim strategy, educational messages regarding a limited number of key practices should be disseminated (Agha et al., 2007). Disease could not be controlled without education of house hold and mothers and their practices would never be changed without proper knowledge on the child vaccination (Zahidie, Wasim, & Fatmi, 2014). Improving the mother's education level is very important, to empower the first care provider of child in the community. However, in the meantime, health educational messages related to the limited number of key family practices should be disseminated (Shaikh et al., 2014). Research suggests that an immunization of children under 5 years among different regional and socio-economic population groups in Pakistan gives insights on the health facilities used for immunization and the reasons for not vaccinating the children like non-availability and accessibility of vaccines (Lorenz & Khalid, 2012). A simple educational intervention designed for low-literate populations, improved vaccine completion rates by 39% and these findings have important implications for improving routine immunization rates in Pakistan (A. Owais, Hanif, Siddiqui, Agha, & Zaidi, 2011). The EPI coverage in rural village of Pakistan is quite well established, but

still left room for improvement. Factors that encouraged higher immunization rates were more educated mothers, better awareness and availability of door-to-door services (Ahmad et al., 2011). The health education messages were significantly increased the vaccination status of children under 5 in the rural areas of Pakistan during an interventional study (Anjum et al., 2004).

Health education of the fathers has been used as the key component of the model intervention during this study. This program has statistically proved that the regular education, social mobilization, facilitation, mass communication, lobbying, can increase the knowledge of fathers in the intervention Population. However, there were no any change have been reported in the control Population. During this study we have implemented the CSM Model by conducting Community meetings arrange by identified community influential people. Studies have also supported our findings by giving their concluded suggestions in their research that the regular education and their effectively implementation can positively influence the behavior of house hold fathers and also helps in improved practices of the family regarding utilization of routine immunization service which are available in the Basic health unit which is easily approachable within the community(Adhikari et al., 2006; Anjum et al., 2004; Szilagyi et al., 1994). House hold father is the most influential person in the family who can be affected by the Population acquired preventable diseases frequently, their proper knowledge is more important while preventing their under five children from these deadly communicable disease which can only be possible through education and close coordination of basic health unit staff under the leadership of medical officer only. However, the regular information through education, community meetings, targeted social mobilization ,community communication ,IEC materials, advocacy ,reminder services and conducting the regular camps on routine immunization for the wariness of population is needed otherwise they even not know the importance of routine immunization. Healthy environment and regular approach with the house hold fathers could be improved through constant guidance in form of education. Knowledge about the importance of routine immunization and general health was reported poor in the in the house hot fathers at the baseline

while they has improved their knowledge from 20% to 40% in house hold fathers after the intervention. A review of health education also found popular health education as an effective method for enhancing empowerment and improving health (B. Shah et al., 1991; Wiggins, 2012). It is recommended that policy makers should make policies that include health education to improve immunisation services in their countries. Researchers should implement professional types of intervention by using latest technologies such as smart phones and tablets, or social internet platforms, to spread the messages of benefits of immunisation in communities with low knowledge of these services and also assess their effectiveness. Health managers from developing countries can use health education or professional interventions shown in this review as an effective measure for improving immunisation services for CCDs in their respective localities. The study findings are consistent with other studies for strengthening the routine immunization   which have also tinted the significance of knowledge and awareness of routine immunization in Populations living the catchments of Basic health unit. Studies from developing countries with in the similar situation has also reported the similar kind of results and concludes that the Population workers has lack of knowledge and practices regarding routine immunization at primary health care level.

Reminder services have been tested during this intervention as one of the component for CSM Model during the reminder services a refresher messages on routine immunization has been delivered to the house hold fathers during the weekend. This different approach of the model was adopted with the aim to improve the Knowledge of the House hold fathers regarding routine immunization within the Population. This component has resulted in statistically significant changes in the Knowledge of house hold fathers after intervention in the Population while there was no any significant change has been reported in the control Population. There, this CSM Model has remains successful while improved the house hold father's Knowledge at their door steps. There was no any research has been previously conducted for to test the efficacy of these reminder services regarding routine immunization utilization. However, these reminder services were tested and

proved successful in weight reduction research by changing the individual's behavior modification (Peron, Rat-Fischer, Lalot, Nagle, & Bovet, 2011). House hold fathers were not regularly utilized the available services for the routine immunization for their children. However, the practice in the intervention Population has been improved through implementation of CSM program. Studies from other neighboring countries with similar kind of situation are also with agreement in that there was no apprehension in Population on different stages of immunization utilization practices due to Lake of Knowledge at the house hold level (Adhikari et al., 2006; Anjum et al., 2004; Szilagyi et al., 1994).

Third components were social mobilization CSM Model was used to improve the practices of house hold fathers at their door steeps by giving them social mobilization for routine immunization utilization. There was a trivial change in mean score of knowledge and practices with in the control group have been observed. This is likely due to the consistency of the knowledge among the house hold fathers in this Population due to the frequent transmission of same kind of cross sectional surveys, the education through CSM Model have not been given to these house hold fathers in control Population as compare to the intervention Population for to improve their knowledge and practices. Literature shows that the regular practical education has proved positive affect on the practices of house hold fathers and their behavior. Education through face to face contact when given combine with other interventional approaches has synergistic effective strategies for improving the practices and health behavior as compare to intervene the single strategy for the behavior change (Arisanti, 2012; Sallis et al., 2008).Most problems identified during that research were lack of the knowledge regarding routine immunization, their effects.

During our study, it was found that the household fathers were not proper practicing for Full immunization of their children as per the WHO guidelines. There was no any proper supervision and leadership from both Populations utilization for executing the routine immunization practices. However, we have implemented our intervention through Full involvement of the administration in one of the intervention Population

only. Studies from developing countries with similar kind of situations also divulge that Education can with proper follow up lead to better routine immunization practices within the health facilities (Al-Khatib, Al-Qaroot, & Ali-Shtayeh, 2009; Zamoner, 2008). Therefore, the health policy makers should replicate this knowledge translation program in other Basic health Units of the country to manage the big threats of immunization covered. The results of this study suggest that use of a CSM training model could improve Knowledge and practice in regulated Routine immunization. Such improvement could translate into improved performance. Therefore, it is proposed that the health policy makers and provincial and District authorities must replicate this knowledge translation program in other basic health units of country to manage the big menace because of low coverage of routine immunization in the country.

5.3 Conclusion

The main purpose of the study was to find the effectiveness of the CSM model intervention on routine immunization . There were two BHUs catchment area population has been included in this study one BHU has received the intervention program for other BHU it was continuing their routine activities. A total of 234 subjects participated in this study. The questionnaire data was collected at two times during the start of study and after 3 months follow-up. The guided questionnaire was translated in local language to the house hold fathers was taken at their doorsteps. The other measurements of the study were knowledge and practices on the routine immunization.

House hold fathers who were permanent resident in both BHUs catchment areas were enrolled in this study. They were informed about the study and written consent was taken prior to conduct the survey. This study hypothesized that the model would be effective on improving routine immunization among under five years' children at Basic health unit levels (BHUs) level of Panjgur Balochistan Pakistan. There was no significant difference in both BHUs before the intervention regarding knowledge and practices on routine immunization.

Most of the household's fathers were within the age of 19 to 40 years with high school education in both populations. Their average income was above 10,000 thousand Pakistan rupees that are equivalent to 100 US. All of the subjects were male and permanent resident of the area. The finding of the study revealed that House hold fathers in the intervention group had significantly increased their knowledge and practices regarding immunization from the control group. There was also positive significant change within the intervention group regarding knowledge and practices of the subjects.

Regarding Knowledge most of the house hold fathers did say that routine immunization for their children was important but their information regarding existing facility available in the BHUs which is accessible and free of cost was low. After the intervention there was a significant difference with the intervention group but there was no change in the control group. This concludes that the house hold fathers had better knowledge regarding routine immunization after the intervention.

Knowledge of the subjects also increased in the intervention group and was statically significant. Knowledge was increased because of CSM model intervention. However, there were no any change has been reported in the control group. Apparently, it was known that knowledge is an intermediate point on any scale that seeks to evaluate the effectiveness of any care program. Knowledge is not independent of other factors particularly for utilization.

Good practices about routine immunization among House hold fathers have been an important determinant for the family. In this study there was significant difference in all steps of practices in the intervention group. After the intervention House hold fathers had improved practices towards routine immunization at BHU levels. However there was no any significant change has been reported regarding practices on routine immunization in the control BHU. In this study there was no financial support provided to house hold fathers, however the Education materials, brochures supply in the intervention BHU, were being provided free. The drop in study may be due. Practices has been improved within the group in intervention group and found statistically significant. However, no change has been reported in the control arm.

In the control there was also no statistical difference after the intervention. The practices among House hold fathers remember constant during the 6-month period it may be because House hold fathers had constant knowledge and practices and were can not being educated during this period on the Routine immunization. This might be one of the reasons why Routine immunization practices remain same in the control group. Secondly, House hold fathers who participated in the study from control BHU were practically involved more in the Routine immunization activities in BHU level.

Education of, House hold fathers can increase knowledge of fathers regarding Routine immunization at BHU level. Reminder services proved a better approach while in improving the practices of family. Weekly reminder service with support from BHU incharg during the model intervention helped effecting practices. This concludes that the intervention was effective in improving the Routine immunization practices at BHU levels of District Panjgur Balochistan Pakistan by using existing services within both BHUs effectively and efficiently.

This study has concluded that CSM model is an effective program shows statistical significant change in intervention group and sustainable program for improving the Knowledge and practices of House hold fathers face to face education, social mobilization ,advocacy and reminder services about Routine immunization within entire population. For the sustainability it is proposed that the health policy makers should replicate this knowledge translation program in other Basic health Units of the country to manage the big threats of immunization covered. The results of this study suggest that use of a CSM training model could improve KAP in regulated Routine immunization. Such improvement could translate into improved performance. Therefore, it is proposed that the health policy makers and provincial and District authorities must replicate this knowledge translation program in other basic health units of country to manage the big menace because of low coverage of routine immunization in the country.

5.4 Limitations

- Some generalizability to other government Basic health Units. The study has been conducted two catchment area population of Basic health Units and the issues identified during the study are almost similar in all the same kind of facilities across the country. Hence, these findings after intervention may be applied at the primary health care level of healthcare facilities in the country.

- Another limitation of this study was unable to measure attitudes regarding immunization of parents .the attitude was not measured because local populations in Balochistan province have low knowledge of preventable disease and their prevention, this may lead to falls measures of attitudes.

- This was self-financed study where the researcher has no provision to provide incentives to the study participants.

- Some confounding factors were beyond the scope of study.

- As both the Basic health Unites were located at the same city, there was a probability of contamination between the groups. However, the distance between both Basic health Unites was more than 10 kilometers. There were only these two Basic health Unites, which have similar characteristics and were comparable. The influence of contamination on this study was little.

- Short intervention to measure all 15 months immunization coverage

- It must be mention that this intervention might not have benefited all the House hold fathers due to the nature and time constraints for the intervention.

5.5 Strengths

- Although assessment study has been conducted in various groups of persons in a family in Pakistan, but there is no single study that focused on educational intervention with the household fathers/heads on Routine immunization.

- This was Quasi-experimental study with control and intervention group, is itself strength of this study.

- In addition to this the mixed approach involving both observation and secondary Data triangulation in the discussion is one the major strengths of the study.

- Randomization before intervention both in control and intervention catchment population BHU among the House hold fathers was the strength of this study.

5.6 Recommendations

This study is just an entry into this field and evaluation performed over longer periods in multiple BHUs and at primary levels of care would definitely yield even richer evidence. Long follow up after the intervention will potentially present an impact inference of this educational intervention. Although the results of a BHU based intervention cannot be considered as a solid foundation for making decisions in health planning, the results of this study suggest that these similar interventions should be conducted in others BHUs of country to increase levels of knowledge and practices among house hold fathers living in the catchment Areas of BHUs of Pakistan. Problems like financial constraints, lack of trainings, implementation issues and availability of vaccines have been seen in these BHUs are almost resembled with all of the same kind of BUHs in the country. However, we can recommend that this model should be replicated in these BHUs across the country.

5.6.1 For Policy makers

- Although the results of a single interventional study cannot in themselves be considered as a solid foundation for making decisions in health planning, the results of this study suggest that similar kind of interventions should be carried out to increase level of knowledge, practices among household heads/fathers at primary health care level. Since CSM model has a strong association to be effective with practices on Routine immunization, it is

imperative to reinforce relevant immunization policies, improving Routine immunization practices.

- This model should be replicated as the part of continuing education plan in these basic health units.

- Proper time for Routine immunization should be given at all basic health unit levels.

- This interventional study has proven that effectiveness of education among household heads/fathers at primary care unit. Similar kind of facilities can replicate this model in their primary care units to improve the practices of routine immunization.

- Refresher/education should be carried out from time to time to build the capacity of unit staff and empowering them to work more efficiently in the routine immunization.

- Administration support should be provided to the vaccinator and the EPI center involved in the routine immunization activity and there should be a regular coordination meeting conducted with different stakeholders at primary health care level.

- This intervention can be replicated and implemented in other Basic health units for improving the knowledge and practices of household heads/fathers regarding routine immunization at BHUs level.

- A separate budgetary head should be allocated for the activities of immunization team within every basic Health unit.

- The policy makers should use this research as an evidence to develop strategies for improving routine immunization practices within Basic health unit.

- Basic health unit team under Medical officer has actually demonstrated good routine immunization practices and may add this model for good results.

5.6.2 For health care Team

- Priority should be given for improving relationships between health care team under supervision of Medical officer increasing decision-making latitude among staff members. Developing staff and empowering them to make decisions about their work is necessary to achieve quality outcomes. It is recommended that employees' should have a scope of enrichment and be of interest.

- Routine immunization should be improved at all level within the district by implementing this CSM model.

5.6.3 Impact of services

- Continuous service evaluations and monitoring of routine immunization can be useful to determine aspects of the services that need improvement. Involving the household fathers in a cooperative, team approach will allow for consideration of ways to improve aspects relating working performance. Improving the work environment so that it provides a context in line with the aspirations of workers is likely to increase their behavior and consequently have a positive effect on individual, organizational and quality of health care services.

- There should be uninterrupted supply of Vaccines to ensure for proper sustainability of this model.

5.6.4 For researchers

- This study may serve as a base for future studies in different organizations on a larger scale. Further analysis of data is needed, as there are numbers of issues that can be explored further.

- Cost benefit analysis studies for this model intervention should also be conducted.

- Comparison of Effectiveness for each of 4 separate interventions.

- This research should be carried out in other Basic health Units for longer period of time get the outcome for better practices among Household heads /fathers.

- Large scales studies should include attitudes of the community related to child health with satisfactory attitudes regarding immunization and preventable diseases

- This research will provide evidence based findings and will include in the literature review.

5.7 Acknowledgment

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APPENDIX

APPENDIX I: INFORMED CONSENT FORM

Sample no...................................

Responsible person(s) and institute:

Dr. Zulfiqar Ali

PhD. Public Health

College of Public health sciences,

Chulalongkorn University Bangkok 10400, Thailand

Date of consent..............................

I (Mr. /Mrs. /Ms.).....................................

Home address...

Contact number ....

I have read and understood all statements in the informed consent form. I have also been explained the objectives and methods of the study, as well as possible risk and benefits that may happen to myself upon the participation in the study. I understand that the information will kept confidential and my name will not be disclosed in any case. I shall be given a copy of the signed informed consent form.

I have the right to withdraw from the project at any time without any adverse effects upon myself.

Signature.......................... (Respondent) (Informant) ....

Signature.................................... (Researcher) (Dr Zulfiqar Ali)

APPENDIX II: QUESTIONNAIRE (HOUSE HOLD FATHER/ HEAD/GUARDIAN

Knowledge and practice Vaccine Coverage survey

Instructions

1   Introduce yourself and explain the purpose of your visit. Verbal Consent

should be obtained from the respondent before the interview.

2   If consent is not given stop interview and move to next house.

Date…………………………………………Interviewer ID No………………………

	SECTION I: SOCIO-DEMOGRAPHIC INFORMATION	
1	Income	
2	Education	
3	How many members usually live in this Household including you?	
4	How many Children are live in this household?	
5	How many are children under-5 years of age?	
6	Sex of Under-five children	

	Section II: HEALTH IN GENERAL QUESTIONS (please tick for either yes ,No or don't know)				
No	Question		Yes	No	DK
1	Concerning your opinion what is the Health of children?(write the number of responses given)	Without Disease----------------------------[1] Normally Growth---------------------------[2] Shows interest in Toys-------------------[3] Good Eating and sleeping---------------[4] Always smiling and not crying---------[5] Others (specify)----------------------------			
2	What are the three important health problems, can you prioritize, that usually have a medical condition in your children (write the names of the problems as the respondents narrate)	Diarrhea---------------------------------------[1] Flu--[2] Cough--[3] Fever---[4] Chest Infection-----------------------------[5] Abdominal Pain-----------------------------[6] Vomiting -------------------------------------[7] Pneumonia-----------------------------------[8]			

3	What is your choice when your child becomes unwell?	Doctor--[1] Hakeem ---[2] Homeopathic doctor --------------------------------[3] Quack---[4] LHV--[5] Nurse--[6] Traditional healer---------------------------------[7] Self-medication -------------------------------------[8]			
4	By your thinking why a child get Unwell? (Open ended)	Waste / dirt--[1] Refused Immunization --------------------------------[2] Malnutrition--[3]			
5	Have you heard of Immunization?				
6	Do you Know of any disease which have been eradicated from Pakistan				

SECTION II B .KNOWLEDGE ON IMMUNIZATION					
No	Question		Yes	No	DK
7	How can you prevent your child from vaccine avoidable Diseases?	By proper disposal of waste/sewage---------[1] By vaccinating a child/person-------------------[2] Avoiding contact with an infected child/person--[3] Washing hands with soap and water ------[4]			
8	What do you think are the social factors which can contribute to Preventive Diseases?	Lack of education----------------------------------[1] Un employment-----------------------------------[2] Large family size----------------------------------[3] Poverty---[4] Don't know --------------------------------------[5]			

| 9 | Do you know any of the diseases for which the vaccination in Pakistan has been carried out? (do not give any assistance | Polio--[1]
 Tuberculosis-------------------------------------[2]
 Diphtheria --------------------------------------[3]
 Whooping cough -----------------------------[4]
 Measles ---[5]
 Hepatitis B -------------------------------------[6]
 Tetanus---[7]
 Small pox---[8] | | | |
| 10 | How does vaccination of young children play a role in | Preventing disease ------------------------[1]
 Keeping the child well----------------------[2]
 Promoting growth----------------------------[3]
 Prevent from disability---------------------[4] | | | |

11	Which children are prone to develop Preventive Diseases	Children with repeated illness ---------[1] Children who are week------------------------[2] Children which not immunized ------[3]			
12	In your opinion, is there any difference in requirement of vaccine between boys and girls				
13	Is the immunization center Close to your home				

SECTION III .PRACTICE REGARDING IMMUNIZATION
(Please tick for either Yes, No)

| No	Ques		Yes	No
1	From Where did the child get t h e l an s t dose?	Routine visit by the Polio team--------------------[1] Regular visit to health facility-----------------------[2] Unwell child visit to health center --------------[3] School--[4] Growth monitoring/Immunization day------------[5] Polio program vaccinator -----------------------------[6] LHW--[7]		
2	If the Vaccinator does not visit your home during immunization days , do you know where to get your child Vaccinated from?			

3	Where you go for child routine Immunization?	Government Hospital----------------------------[1] Private clinic------------------------------------[2] Health Centre(BHU)---------------------------[3] LHWs---[4]		
4	If the r o u t I n e vaccines is not Available at health facility can you come back on alternate days?			
5	Can you help the teams During the vaccinating campaigns			

SECTION V: C SATISFACTION RELATED TO ROUTINE IMMUNIZATION SERVICES					
No	Question	Source	S	VS	NS
1	What is your opinion about the Health Staff who	Very helpful and supportive-----------------------[1] Too young---[2] Protect our children against Polio disease------[3] Waste our time---------------------------------------[4]			
2	Are you satisfied with the performance of the vaccinator?				
3	Are you satisfied with the large number of Polio campaign that's going in your area?				

SECTION VI :INFORMATION ABOUT UNDER FIVE CHILDREN						
S.#	Name of Children Under 5 years	Sex 1.Male 2.Female	Age	Date of Birth Day/Month/Year	Did the child Received routine vaccination	
					Yes	No
1						
2						
3						
4						
5						

SECTION VII: IMMUNIZATION STATUS (TO BE FILLED FOR EVERY UNDER 5- CHILD			
Card			
At Birth			
BCG			
Source			
Presence of			
OPV 0			
Source			
At 6 week of age			
Pentavalent			
Source			
OPV 1			
Source			
Pentavalent			
At 10 weeks 0f age			

Pentavalent			
Source			
OPV 2			
Source			
At 14 weeks of age			
Pentavalent			
Source			
OPV 3			
Source			
At 9 months			
Measles			
Total doses of OPV			
Total doses of			

Immunization Status			
Full			
Partially			
Un			
Codes: Source= [1] EPI Center [2] Campaign [3] Not remember Scar [1] Yes- [2]No [3] Child not available			

General Comments if any

APPENDIX III: TIME FRAME

Project procedure	JUn 13	JUL 13	Aug 13	Sep 13	Oct 13	Nov 13	Dec 13	JAn 14	FEb 14	MAr 14	APl 14	May 14	JUn 14	JUl 14	Aug 14	SEp 14	OCt 14	Nov 14	DEc 14	JAn 15	FEb 15
1.Literature revive	█	█																			
2.Writing proposal		█	█																		
3. Proposal Exam				█																	
4.Ethical consideration					█	█															
5. Pretest Questionnaire							█														
6. Intervention								█	█	█											
7.Data Collection										█	→→→→→→					█	█	█			
8. Data Analysis																	█	█			
9.Thesis and Article writing																		█	█		
10. Thesis exam																				█	█
11.Submission for article publication																					█
12.submition of thesis																					█

APPENDIX IV: BUDGET (IN BATH)

Expenditure	Cost
Traveling	30,000
Research assistants	40,000
CHW	40,000
Stationary	40,000
Workshop	30,000
Training	30,000
Miscellaneous charges	30,000
Total	240,000

APPENDIX-V: ETHICAL APPROVAL

BRIDGE CONSULTANTS FOUNDATION

COMMITTED TO PROMOTE PUBLIC HEALTH RESEARCH

BRIDGING SOCIAL, ECONOMIC AND HEALTH CONCERNS

8 December 2014

Dr Zulfiqar Ali
Principal Investigator

RE: Ethical clearance for the study titled "Integrating Community and basic Health unit Services to Strengthen Routine Immunization in Panjgur district, Balochistan: A Quasi experimental study"

Dear Dr Zulfiqar,

Thank you for submitting the revised ethical review application form. The study has been reviewed and is provided ethical clearance for one year from today's date.

In case of any change in the protocol or consent procedure please inform this committee at your earliest.

Sincerely yours,

Mohammad Umer Abro
Chairperson

250/D, Block-6, PECHS, Nursery, Karachi-75400, Pakistan.
Phone : 021-34536151, 34535912 Fax : 92-21-34382758
E-mail : bridgeresearch_k@yahoo.com Website : http://www.bridgeresearch.org.pk

APPENDIX VI–A: KNOWLEDGE STATEMENTS SCORES

S.#	Knowledge variables	Intervention n (%)		Control n (%)	
		Pre (baseline) n=117	End line After 3 m follow up n=106	Pre (baseline) n=117	End line After 3 m follow up n=108
		Correct answer			
1	Concerning your opinion what is the Health of children?(write the number of responses given)	13.7%	41.5%	12.8%	10.1%
2	What are the three important health problems, can you prioritize, that usually have a medical condition in your children (write the names of the problems as the respondents narrate)	70.1%	94.3%	72.6%	72.2%
3	What is your choice when your child becomes unwell?	28.2%	84.9%	28.2%	25.0%
4	By your thinking why a child get Unwell? (Open ended)	4.3%	66.0%	9.4%	7.4%
5	Have you heard of	76.1%	96.2%	68.4%	70.3%

	Immunization?				
6	Do you Know of any disease which have been eradicated from Pakistan	25.6%	74.5%	25.6%	19.4%
7	How can you prevent your child from vaccine avoidable Diseases?	31.6%	44.3%	30.8%	27.7%
8	What do you think are the social factors which can contribute to Preventive Diseases?	70.1%	76.4%	70.6%	64.8%
9	Do you know any of the diseases for which the vaccination in Pakistan has been carried out? (do not give any assistance in replying and choose multiple answers)	90.6%	95.2%	87.1%	85.1%
10	How does vaccination of young children play a role in keeping the children healthy?	39.3%	58.4%	38.5%	36.1%
11	Which children are	18.8%	34.9%	19.7%	21.2%

	prone to develop Preventive Diseases				
12	In your opinion, is there any difference in requirement of vaccine between boys and girls	17.9%	42.4%	12.8%	42.5%
13	Is the immunization center Close to your home	84.6%	96.2%	86.3%	92.5%

APPENDIX VI -B: PRACTICE STATEMENTS SCORES

S.#	Practice variables	Intervention n (%)		Control n (%)	
		Pre (baseline) n=117	End line After 3 m follow up n=106	Pre (baseline) n=117	End line After 3 m follow up n=108
1	From Where did the child get t h e l an s t dose	31.6%	69.8%	23.9%	33.3%
2	If the Vaccinator does not visit	25.6%	86.7%	23.0%	28.7%

	your home during immunization days , do you know where to get your child Vaccinated from?				
3	What is your choice for child routine Immunization?	63.2%	88.6%	55.6%	58.3%
4	If the r o u t I n e vaccines is not Available at health facility can you come back on alternate days?	1.7%	83.0%	1.7%	3.7%
5	Can you help the teams During the vaccinating campaigns	8.55%	98.1%	82.1%	22.2%

APPENDIX VI –C: IMMUNIZATION STATUS SCORES

S.#	Immunization Status	Intervention n (%)		Control n (%)	
		Pre (baseline) n=117	End line After 3 m follow up n=117	Pre (baseline) n=117	End line After 3 m follow up n=117
1	Card Available	12.8%	87.2%	18.8%	18.8%
2	BCG at Birth	79.5%	79.5	91.5%	75.9%
3	BCG Source at birth(Health facility)	21.4%	21.4%	17.9%	17.0%
4	BCG Source at birth (Vaccinator/LHW Home Campaigns)	58.1%	58.1%	61.5%	58.9%
5	Presence of Scar	86.3%	86.3	65.8%	83.0%
6	OPV 0 at Birth	69.2%	79.5	79.5%	75.9%
7	OPV Source at birth(Health facility)	19.7%	21.4%	18.8%	17.0%
8	OPV Source at birth(Vaccinator/LHW Home Campaigns)	49.6%	58.1%	60.7%	58.9%
9	Pentavalent 1 at 6 weeks	68.4%	68.4%	76.1%	72.6%
10	Pentavalent 1 source at 6 weeks	17.1%	17.1%	18.8%	17.1%

	(Health facility)				
11	Pentavalent 1 source at 6 (Vaccinator/LHW Home Campaigns)	51.3%	51.3%)	57.3%	55.6%
12	OPV1 at 6 weeks	47.9%	68.4%	47.9%	72.6%
13	OPV1 Source at 6 weeks (Health facility)	11.1%	17.1%	6.8%	17.1%
14	OPV1 Source at 6 weeks (Vaccinator/LHW Home Campaigns)	36.8%	51.3%	41.0%	55.6%
15	Pentavalent 2 at 10 weeks	55.6%	83.8%	53.0%	47.9%
16	Pentavalent 2 Source at 10 weeks (Health facility)	13.7%	15.4%	13.7%	52.1%
17	Pentavalent 2 Source at 10 weeks (Vaccinator/LHW Home Campaigns)	41.9%	84.6%	39.3%	35.0%
18	OPV2 at 10 weeks	50.4%	83.8%	52.1%	47.9%
19	OPV2 Source at 10 weeks (Health facility)	12.8%	15.4%	13.7%	52.1%
20	OPV2 Source at 10 weeks (Vaccinator/LHW	37.6%	84.6%	38.5%	35.0%

	Home Campaigns)				
21	Pentavalent 3 at 14 weeks	35.9%	70.1%	33.3%	43.2%
22	Pentavalent 3 Source at 14 weeks (Health facility)	5.1%	59%	5.1%	4.3%
23	Pentavalent 3 Source at 14 weeks (Vaccinator/LHW Home Campaigns)	30.8%	10.2%	28.2%	29.9%
24	OPV3 at 14weeks	35.0%	70.1%	33.3%	43.2%
25	OPV3 Source at 14 weeks (Health facility)	5.1%	59%	5.1%	4.3%
26	OPV3 Source at 14 weeks (Vaccinator/LHW Home Campaigns)	29.9%	10.2%	28.2%	29.9%
27	Measles at 9 Months	33.3%	55.6%	29.9%	29.1%
28	Measles at 9 Months (Health facility)	1.7%	47%	6.0%	4.3%
29	Measles Source at 9 weeks (Vaccinator/LHW Home Campaigns)	31.6%	7.6%	23.9%	25.6%
30	Full Immunized	11.1%	89.6%	13.6%	13.8%
31	Partially Immunized	86.3%	10.3%	79.4%	79.6%
32	Un-Immunized	2.6%	0%	6.8%	6.4%

APPENDIX VII: PROPOSED POLICY ACTIONS BASED ON CSM MODEL FOR BALOCHISTAN PROVINCE

Immunization challenges in Balochistan province

Amongst the population of Balochistan, the burden of diseases Government of Balochistan can be classified under two broad categories: 50% are due to communicable diseases; reproductive health and malnutrition while the other half due to non-communicable diseases, injuries and mental health disorders. According to MICS Balochistan 2010 nearly 64 percent children had received at least one vaccination; the overall complete vaccination rate was only 4 percent for those who were vaccinated at any time before the survey and in the age group 12-23 months. The percentage of children, who were fully vaccinated before their first birth day, was only 2 percent. With regard to polio and DPT vaccines, the rate for subsequent doses showed a declining trend Overall, complete immunization was slightly higher for female children. Highest rate of complete immunization was noted in Makran region (7 percent) and lowest in Zhob region (0.5 percent). Children in urban areas were more likely to receive complete immunization compared to rural areas (10.4 versus 2.4percent).

Barriers to universal immunization coverage include poor performance at primary health care level of the EPI, socioeconomic inequity in access to services, decreased demand from population, reduced security, and resistance to vaccines among population sub-groups. Recent conflicts and large-scale natural disasters have severely stressed the already constrained resources of the national EPI. Immunization programs remain least priority for provincial and many district governments in the country.

Findings of CSM Model

The main purpose of the study was to find the effectiveness of the CSM model intervention on routine immunization . There were two BHUs catchment area population has been included in this study one BHU has received the intervention program for other BHU it was continuing their routine activities. A total of 234 subjects participated in this study. The questionnaire data was collected at

two times during the start of study and after 3 months follow-up. The guided questionnaire was translated in local language to the house hold fathers was taken at their doorsteps. The other measurements of the study were knowledge and practices on the routine immunization.

House hold fathers who were permanent resident in both BHUs catchment areas were enrolled in this study. They were informed about the study and written consent was taken prior to conduct the survey. This study hypothesized that the model would be effective on improving routine immunization among under five years' children at Basic health unit levels (BHUs) level of Panjgur Balochistan Pakistan. There was no significant difference in both BHUs before the intervention regarding knowledge and practices on routine immunization.

Most of the household's fathers were within the age of 19 to 40 years with high school education in both populations. Their average income was above 10,000 thousand Pakistan rupees that are equivalent to 100 US. All of the subjects were male and permanent resident of the area. The finding of the study revealed that House hold fathers in the intervention group had significantly increased their knowledge and practices regarding immunization from the control group. There was also positive significant change within the intervention group regarding knowledge and practices of the subjects.

Regarding Knowledge most of the house hold fathers did say that routine immunization for their children was important but their information regarding existing facility available in the BHUs which is accessible and free of cost was low. After the intervention there was a significant difference with the intervention group but there was no change in the control group. This concludes that the house hold fathers had better knowledge regarding routine immunization after the intervention.

Knowledge of the subjects also increased in the intervention group and was statically significant. Knowledge was increased because of CSM model intervention. However, there were no any change has been reported in the control group. Apparently, it was known that knowledge is an intermediate point on any scale that seeks to evaluate

the effectiveness of any care program. Knowledge is not independent of other factors particularly for utilization.

Good practices about routine immunization among House hold fathers have been an important determinant for the family. In this study there was significant difference in all steps of practices in the intervention group. After the intervention House hold fathers had improved practices towards routine immunization at BHU levels. However there was no any significant change has been reported regarding practices on routine immunization in the control BHU. In this study there was no financial support provided to house hold fathers, however the Education materials, brochures supply in the intervention BHU, were being provided free. The drop in study may be due. Practices has been improved within the group in intervention group and found statistically significant. However, no change has been reported in the control arm.

In the control there was also no statistical difference after the intervention. The practices among House hold fathers constant during the 6-month period it may be because House hold fathers had constant knowledge and practices and were not being educated during this period on the Routine immunization. This might be one of the reasons why Routine immunization practices remain same in the control group. Secondly, House hold fathers who participated in the study from control BHU were practically involved more in the Routine immunization activities in BHU level.

Education of, House hold fathers can increase knowledge of fathers regarding Routine immunization at BHU level. Reminder services proved a better approach while in improving the practices of family. Weekly reminder service with support from BHU incharg during the model intervention helped effecting practices. This concludes that the intervention was effective in improving the Routine immunization practices at BHU levels of District Panjgur Balochistan Pakistan by using existing services within both BHUs effectively and efficiently.

This study has concluded that CSM model is an effective program shows statistical significant change in intervention group and sustainable program for improving the Knowledge and practices of House hold fathers face to face education, social mobilization ,advocacy and reminder services about Routine immunization within

entire population. For the sustainability it is proposed that the health policy makers should replicate this knowledge translation program in other Basic health Units of the country to manage the big threats of immunization covered. The results of this study suggest that use of a CSM training model could improve KAP in regulated Routine immunization. Such improvement could translate into improved performance. Therefore, it is proposed that the health policy makers and provincial and District authorities must replicate this knowledge translation program in other basic health units of country to manage the big menace because of low coverage of routine immunization in the country.

Proposed Policy Objectives and Actions to be taken by Provincial Department of Health

1. Development and Provision of an essential immunization services package

Provincial health authorities to develop and implement an package of essential services for immunization at primary healthcare for rural areas.. This minimum essential care package would set the basis for standards of care, human resource requirement, appropriate health technology, financial outlays, and essential vaccines.

District Health authorities to ensure appropriate staffing of the BHUs and RHCs, sufficient operational resources to deliver the services, and adequate provision of vaccine supplies.

2. Human Resource Development and management

   Provincial district Health authorities to estimate human resource based on requirements outlined in essential health services package and district strategies. District health departments will track human resources for health by establishing a database of doctors, nurses, midwives and allied health professionals working in the BHUs and RHCs, and integrate primary health service under the leadership of medical officer of BHU and RHC's

3. Generate reliable health information to manage and evaluate health services

Provincial and district authorities to increase capacity to utilize the information for evidence based decision making to be enhanced appropriately.

4. Adopt appropriate health promotion strategies Priority actions

The provincial government to ensure appropriate interventions to increase knowledge related to overall health, preventable diseases and vaccination related to under 5 aged children.

5. Enhancement of health budgets and provision of social safety nets

Provincial government to standardize the per capita cost of providing and delivering a basic package of immunization services for children and to use this as a basis for health budget forecasts and allocation.

Provincial and district authorities to develop joint strategies aimed at enhancing Official Development Assistance (ODA) funding and will coordinate the expenditure of external (ODA) resources to minimize duplication and wastage.

6. Governance and Accountability

Provincial and district health authorities to insure implantation of essential immunization services package through medical officers by integrating community services. Empowering medical officer at BHU level to supervise staff and increase satisfaction of the community related immunization services provided.

VITA

Dr. ZULFIQAR ALI

Academic Qualification:

Degree Name: PhD (Doctor of Philosophy in Public Health)

Degree Name: MPH (Master in Public Health) Major Primary Health Care

Degree Name: MBBS (Bachelor of Medicine Bachelor of Surgery)

Publications:

1.   Ghaffar.N, Ghaffar.A, Kumar.R, Mureed.S, Ali.Z, Safdar.RM, Kumar.R. Assessing Risk factors for Hepatitis C in reproductive life of Women: A tertiary care hospital based case control study from Pakistan. Biomedica. 2015; 31(2):103.

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