

Rural Transport and Health-A Pakistan Perspective

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1. Introduction

Development in the rural transport in many developing countries has primarily been focused on building of roads without considering issues pertaining to rural individual decision to travel and their access to basic needs [1,2]. A developing country such as Pakistan do possesses strategies and policies (which are implemented to an extent) in order to improve existing conditions related to transport, health, food and education in rural areas, but these strategies and policies are not resulted from any comprehensive integrated rural development program [1,2,5]. For instance, within health sector, government has launched health program at national level which include establishment of health centers and appointment of lady health workers (to give awareness about maternal issues especially to women) under the umbrella of people primary health care initiative. Within transport sector, investments have been made for improvement of unpaved roads and construction of new collector roads that provide access to national highways and motorways. These schemes have been found as fulfilling their partial objectives due to the lack of consideration of issues related to accessibility and affordability of rural individuals in connection with new infrastructure and services. This suggest that for overall improvement of rural areas, a development program which focuses on all aspects of rural life and their issues is required to develop and implement. This is vital for alleviation of poverty from these areas and fulfillment of related millennium development goals.

With this background, this article first focuses on understanding the interaction between health and transport in rural areas through key linking factors “Accessibility” and Affordability. Based on this understanding, some lessons are derived which are then reformulated in the form of possible solutions and recommendations.

2. Correlating Accessibility and Affordability of Rural Transport with Health

A recent report on health of women by society of Obstetricians & Gynecologists of Pakistan [6] mentioned that 375,000 Pakistani women suffer every year from pregnancy related complications and in rural areas maternal mortality rate is around 340/100,000 live births. The report suggested four main reasons of this in which two of them related to accessibility i.e. delay in transporting patient to primary or secondary health care centers and the delay occurs at health care centers due to unavailability of professional medical staff at the time of need. Another important aspect related to this is the absence of decision maker, i.e. due to stringent cultural and religious norms; traveling of rural women is very limited and often household head is responsible for distant travel decisions, this fact also contributed a significant share in the delay in transporting patients alongside poor means of transport.

Transportation affordability has played its role too in aggravating the current situation; in rural areas of Pakistan private vehicle ownership is very low in comparison to urban areas. It has been observed that currently 80% rural households do not have ownership of any motorized vehicle, and within motorized vehicles, only motorcycles and tractors share significant contribution. Large percentage of motorcycle ownership is due to the growing industry of local manufacturers with low cost imported parts (particularly from China) [2,3]. Addition to this, 30% households have vehicles which may be categorized under intermediate modes of transport (IMT), within which bicycles, three wheelers cycles and animal carts (mostly donkey carts) contributing significant share. It is because of this reason (i.e. low vehicle ownership) rural individual travel is mostly focused within the village. Consequently, health related travel episodes are also affected and is limited to within 5km distance; therefore, rural individuals are relying on health services available within the village (most of the time these services are operating by quacks and

practitioners following old methods of treatments) unless the health issue become severe. This situation has contributed a significant percentage in overall underage mortality of rural areas within Pakistan; because in many cases recognition of disease at later stages is useless for patients. Recent findings of Agha Khan University (located in metropolitan city, Karachi) report [4] on community health sciences support the above argument, as they suggested that mortality from last stages of diseases like Cancer, Hepatitis, Tuberculosis, and Cholera are more common in patient from rural areas.

In order to further illustrate the correlation between transport accessibility and affordability on health, some specific findings are drawn from a cross-sectional survey of two rural areas of Pakistan namely Hala and Khuzdar, which are located in province Sindh and Baluchistan respectively. These two areas were selected on the basis of their different geographical setup; Hala is positioned on plain land while Khuzdar is positioned on mountainous terrain. The survey was conducted at three levels (i.e. individual, household and village levels) to provide guidelines for development of a transport demand modeling methodology for rural areas considering their access and economic related conditions (A master's research project of the author [1]). Trips related to health and condition regarding health issues was also observed during the survey. Major relevant findings from the survey are as follows:

Villages surrounding Hala District:

The survey within Hala is based on interviews from 100 households living in five different villages, and from these 100 households about 482 individuals were interviewed.

➤ The survey revealed that average monthly household income (an indicator of affordability) is Rs. 5700 and an average household size of 5.9 giving per capita income of Rs. 32.16 per day (i.e. 37% of a US \$). On an average, household spends around 26% of their income on health, 70% of it is spent on travelling required to reach primary health centers because these centers render their services free of cost. Frequency of travel for health (primary medical centers) for an average household is noted around 5.6 days per month (that means household individuals travel for health more than once a week). Transport mode usually used for travelling to health centers is animal carts or push carts (that have occupancy of 2-3 individuals) with expenditure of around 50-70 minutes in one-way trip.

➤ From village level statistics it has been noted that out of five surveyed villages, only one village contain a primary medical center which operate from 8:00 am to 12:00 pm, additionally, it has been found out that density of primary medical centers is 1 per 10 villages within a district (Hala contain 261 such villages, and around 25 primary health centers are operating).

➤ It was noted from the municipal authority record that in the last five months, on an average 10 individuals have been died out of which 6 individuals were expired in secondary and tertiary level hospitals. Five of them were underage and died due to serious life threatening diseases. Village level interview from local people indicated that private vehicle (car) is usually hired for transporting patient to secondary or tertiary level hospitals which charge around Rs. 600, and normally take around 1.3 hours of travelling.

Villages surrounding Khuzdar District:

The same survey methodology was adopted in this district as well, but due to low density of population, 70 households were interviewed from 6 selected villages. Survey findings are as follows:

➤ Conditions of accessibility and affordability in villages surrounding Khuzdar are worse than noted for Hala district. Household size on an average is similar (i.e. 5.8) but household income is lower (i.e. Rs. 4500) giving per capita income of Rs. 26 per day (30% of a US \$). This is because in district Khuzdar employment opportunities are limited compared to Hala where individuals have opportunity for involvement in secondary income earning activities. As villages in Khuzdar are predominantly located in hilly areas, therefore, most of the rural individuals are travelling by walking. Frequency of travel for health (medical centers) of an average household is around 4.5 days per month suggesting healthier conditions than Hala in first appearance, however, health related expenses are much higher as an average rural

household spend around 37% of their monthly income in this aspect. Additionally, mortality rate is observed higher compared to Hala. This may indicate that due to high cost of health (lower affordability) rural individuals in this district may avoid visiting health centers. Transport means used for travelling primary health centers are usually non-motorized vehicles in the form of animal carts, push carts and back seat (i.e. “*kamar band kursi*” a light wooden seat which carry a patient and it is loaded by a man on his back). Usually within a village two or three men provide their services for back seats.

➤ Availability of basic services and facilities is very poor, in particular health centers. Khuzdar contains 112 villages with a density of 78 households per village. Single primary health center serving around 15-20 villages, which are spread over 1500 sq km. The longest one-way trip to reach primary health center was noted around 40-60 minutes using motorized transport means and with non-motorized transport this is around 3-4 hours, suggesting acute accessibility problems. Consequently, people living in remote villages seldom visit health centers as they rely on village level medical facilities which are available in the form of old traditional methods. Fortunately, a national highway crosses this district which helped resolves issues in transporting serious patient to district secondary or tertiary hospitals but again due to its expensive nature, affordability becomes a deterring factor. Occurrence of mortalities per village is noted as 1.5 per month using a past one-year municipal authority data, infant and females are noted as a vulnerable group due to their higher dependency on males.

3. Measures/recommendations for Improvement:

The general perspective of rural health and transport conditions and review of the situation existing in specific rural areas of Pakistan demonstrate that there is a strong connection between transport accessibility and affordability with the health of rural individuals. Furthermore, it has been found out that children and women representing a vulnerable group whose health is more affected and sometimes compromised under the current circumstances. These lessons suggested that new policies and innovative solutions to improve accessibility and affordability of rural individuals are unavoidable, but at the same it is vital that effectiveness of these solutions can only be possible when these are focused on children and women. Based on these learning, this section recommends few measures and solutions which are as follows:

➤ Development of Integrated Rural Development Program:

Pakistan currently possesses range of disintegrated schemes and strategies for improvement of health, transport and education conditions but these were partially successful due to lack of integrated approach. Furthermore, rural community participation is ignored in these schemes and strategies. Elements of Integrated Rural Accessibility Planning (IRAP) [9] strategy may be adapted in the context of Pakistani rural areas, for example accessibility indicators which are used as a measure of accessibility in IRAP need to be redeveloped incorporating stringent cultural norms that introduce gender biasness. An important element of IRAP, which has been found missing in the surveyed villages is the existence of community participation to resolve issues. Local landlords (usually called as Zamindars) are the prime persons who take care of most of the issues pertaining to rural society on a smaller scale, and sometimes their decisions/measures are self-centered. Introduction of the element of community participation in such a manner that prime responsibilities are distributed on the basis of equality among the major players i.e. local Landlords, primary school teachers (a group of learned male and females), and Imam of the mosque (i.e. leader at the place of worship, equivalent to Church’s Father) may bring positive changes. These three identified players are vital within the Pakistani rural community and it was observed that rural individuals take their words and opinions whole heartedly.

➤ Special Consideration to Intermediate modes of Transport:

It has been realized that Pakistan’s Government has invested significantly in improving road infrastructure, but the importance of travel means are not realized as such. Rural individuals however come up with their own ideas about transport modes; consequently, a variety of Intermediate modes of transport are available with slightly different features across the rural areas of the country [7]. *Qing-qi* a relatively cheaper motorized version of push carts/animal carts is getting a larger attention, now it is available for use with CNG. This vehicle may be used as a Para-transit, Public transit and in case of emergency it can be

converted into ambulance as well. Furthermore, this type of vehicle is more suitable for the population that represents a vulnerable group as compared to another popular motorized mode (i.e. motorcycles) due to easy boarding and alighting and much safer design. The only reason of their limited use is the unavailability of fuel pumps. Government need to take a step forward, and give special consideration to this mode and make its design safer than it is now and ensure availability of fuel. This vehicle has proved its potential in sub-urban areas of Pakistan and is quite popular carrying around 6-8 passengers. The rural areas that mostly have flat terrain (e.g. Hala as surveyed village) may get higher benefit from this type of transport. In the same manner, interventions like construction of safer rope bridges can prove vital for improvement of accessibility conditions in hilly or riverine areas. Successful examples of this have already been seen in northern part of Pakistan (and during time of recent flood, this was the only low-cost mean utilized by local individuals for transporting people from affected areas to safer place).

➤ **Mobile Primary Health Centers System:**

Development of mobile health care centers can be ideal for poor rural individuals. The infrastructure requirement is just an ordinary van normally used as an ambulance. This not only reduces transportation cost but also reduces accessibility problems. However, a systematic approach needs to be followed for its successful and feasible operations. For example, frequency of their visit to a particular area should be based on population of the village. Moreover, a designated section in the secondary health unit should control their scheduling and movements. As discussed earlier, in rural areas of Pakistan, individuals especially children and women health is largely compromised over accessibility and affordability issues due to which there is significant higher mortality rate exist. Surveyed villages in both districts also showed this trend. With variety of other possible interventions the effectiveness of this system can be increased; such as along with the paramedical staff (a male and female) presence of junior doctor may help identification of life threatening diseases at an initial stage which consequently help reduction in overall mortalities.

➤ **Effective use of Telecommunication technology-Cellular phones:**

Information technology department of Pakistan has shown great commitment in providing their services to an every inch of Pakistani land. Furthermore, cellular phones are now affordable and according to a survey from the students of Rural Sociology department of the University of Punjab [8], their ownership in rural areas is increasing at an exponential rate. This can be potential and viable alternative for development of strategies within the integrated rural development program. For example, development of a demand responsive transport system through which rural household has a flexibility to contact vendors of public or para-transit type of transport at any time of the day and fulfill their need by traveling using their services. In current situation, use of cellular phone is very limited in the surveyed village for access related problems associated with the health; this may be potentially due to the non-existence of any demand responsive transport system. This alternative, however, have a potential to render faster means of transporting seriously ill patients to secondary and tertiary level hospitals and help reducing mortalities occurred just due to delays in transporting. Furthermore, the stringent cultural norms required that presence of male family member is necessary in lengthier trips; this means of telecommunication in an emergency could largely benefit women, as the contact with the male members of the family become easy and fast when they are outside of their homes, and consequently a timely and informed decision can be made about a particular emergency situation. Government of Pakistan can also play its role by providing cheap cellular phones (at least two sets in a particular household) which are relatively easy to use as well.

➤ **Location Efficient Development:**

Government need to develop rules and regulations for promotion of location efficient development, which means residents and commercial developments should be located and designed in such a fashion which maximize accessibility. Some attraction strategies and awareness campaigns through key players of rural community (already mentioned above) are required to be launched. This reduce overall accessibility problems of rural individuals and on the other hand improves affordable transportation options, such as walking, and cycling and tend to significantly reduce household transportation costs. Furthermore, this has the potential to reduce gender biasness in travel, as women in Pakistani rural society are reluctant to perform activities that require traveling large distances.

4. Conclusion:

This article presents a brief analysis on the interaction between rural transport and health within a Pakistan perspective and showed that accessibility and affordability of rural individuals are the key indicators that help understand the current state of the affairs. Overall in general, rural individuals are compromising their health because of poor access and affordability, especially children and women are suffering more because of their high dependency on the male members of family due to stringent cultural norms. The statistics from the surveyed villages of two districts also shown the same trends, however, areas where terrain is mountainous these problems are much severe. Based on these findings and overall understanding of the prevailing dynamics of rural society in Pakistan, the article proposes few solutions /measures to improve the existing situation. The proposed solutions are directed towards addressing key indicators i.e. accessibility and affordability and have an element through which vulnerable group can be largely benefited.

5. References:

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