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Constraints in Livestock Health System in Balochistan-Pakistan and its Impact on the Economy

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ABSTRACT: A study was conducted in December 2016 to April 2017 to identify the impact of livestock health system on the livestock economy of Balochistan. Livestock is the largest sector of agrarian economy of Balochistan. However, it is facing number of limitations and constraints. Livestock health system has emerged as an impediment to the development of livestock economy. Current study focuses on the constraints in livestock health system of Balochistan. The Province of Balochistan has the largest number of small ruminants in the whole country, hence, the study is more focused on the health related issues of small ruminant in particular. Due to the largest province of Pakistan (in terms of area), the province of Balochistan, is facing numerous veterinary related issues, such as: Poor Veterinary services (PVS), Poor Veterinary extension services (PVE) and Improper medicine supply (IMS). These factors have direct impact on the livestock economy of Balochistan. This paper is an attempt to look into these factors in order to identify its alarming worst impact on the livestock economy which is considered to be the backbone of the province. The results indicated that the health constraints had the direct impact on the economy of livestock especially small ruminant in the province.

Key words: Livestock, Small ruminants, animal health constraints, diseases, Economy.

INTRODUCTION

Balochistan is located in southwest of Pakistan, constituting approximately 44% of the country's total land mass (Geological Survey of Pakistan, 2005; Shafiq *et al,* 2016), and the smallest in terms of population, being home to less than 5% of the country's total population (Population and Housing Census of Pakistan, 1998). Most part of Balochistan is highly arid zone of the country, so crop cultivation is considered very difficult in major parts of Balochistan, due to low annual rainfall, creating a shortage of water resources. The low rainfall varying from 50 millimeter in coastal areas of Makran and Chagai district to 400 mm in the North Eastern Parts of Lorelei and Zhob districts (Balochistan Sub Strategy, 1999). Poor nutrition in combination with livestock diseases are a serious problem limiting production of small ruminants in Balochistan. It is estimated that only 11 % of Baluchistan's livestock have access to veterinary dispensaries (Mansell, and Wehn, 1998). The inaccessibility of many rangelands areas and the migratory nature of Balochistan's livestock systems, adds to the problems. Most commonly the high morality in animals can be due to infection diseases lice Anthrax, Black quarter, sheep pox (Schwabe, 1984), Pleuro-pneumonia. Bovine Diarrhea, Foot and Mouth Rinderpest and Entero Toxaemia and parasitic diseases like lung worm, intestinal worms, liver flukes and Piroplasmosis (Lanjouw and Lanjouw, 2001). Effects on economic productivity of livestock due to ecto-parasites like ticks, mango mites, sheep kids and warbles has been found to be detrimental factor (Walsh *et al.,* 2003). Livestock sector in developing and underdeveloped economies are heavily damaged by frequent diseases and improper procurement of medicines (Dunlop and Williams, 1996). Lack of veterinary services, non-availability of extension veterinary services and improper supply chain of livestock medicines have drown the underdeveloped agrarian economies in the world (Walsh, 2003). Livestock health is paramount for livestock and agrarian economies in the world, especially for the emerging economies (Committee on the National Needs for Research in Veterinary Science, National Research Council, 2005). Currently this economy is facing number of constraints from varied reasons (Shafiq *et al,* 2017).

Existing interventions to improve animal health services in the province are through a set-up of limited veterinary hospitals and dispensaries manned by graduate veterinarians and stock assistants such as: Para – veterinarians (Noah *et al.,* 2000).

Veterinary education is important for healthy animal and disease control can bring the substantial changes in the economies like Australia, Denmark and Holland (Committee on Assessing the Nation's Framework for Addressing Animal Diseases, 2005).

Addition of vaccine production against more diseases is also in progress Livestock & Dairy Development Department (2005-06). Since early 1970s, the emphasis improvement has been through the development of artificial insemination services in cattle and buffalo in Pakistan (Steele, 2000). In Balochistan, a beginning for regular artificial insemination program in cattle was made with the implementation of EEC/ADB assisted Balochistan Livestock Development Project which one of focuses were to empowering women through livestock rearing (Khushk and Hisbani, 2004). Under the project almost 180,000 doses of Friesian breed of cattle have been imported from abroad to maintain a semen bank at Quetta where two liquid nitrogen plants have been installed to produce and supply liquid nitrogen, the only preservative storage media for frozen semen, to 40 A. I centers established in strategic areas of the Province (Khawaja, 2003). Annually 22,000 inseminations are carried out in cattle for producing cross-bred to increase milk production (Khan *et al.*, 2000). A Semen Production Unit and Embryo Transfer Technology Centre have been established at Quetta for expanding breed improvement program scientific lines. 135, 625 heads of hoof stock in another district; 9574 animals fall to the share of one dispensary in one district while these are 316,458 per dispensary in another district (Khan, 2009). The treatment (5.6 %) and vaccination (11 %) of total number of hoof-stock (270268 million) during 1995-96 *i.e.* once a year indicate an extremely low veterinary coverage (Islam *et al.*, 2006). The use of multiple vaccinations and treatment for some diseases can further reduce the coverage percentage as women can take the advantage of vaccination to their sick animals (Kantor, 2008). Provincial Livestock Department lacks sufficient resources and trained manpower to provide a full service to the entire province.

The objective of the paper is to highlight the constraints in livestock health system of the province of Balochistan-Pakistan. The purpose is to identify the livestock especially small ruminants' health related issues which have the negative impact on the development of economy. The research article explores those areas which need to be addressed in order to give boost to the agrarian economy of the province.

CONCEPTUAL MODEL

The conceptual model identifies the different factors implications on the economy of livestock in Balochistan. Hence, the model provides the basis for the study which is conceptually verifying the downside areas to the livestock economy. There are the following factors which importantly depress the development and growth of the economy of Balochistan.

A. Poor Veterinary services

It is a matter of fact that most of the agrarian areas of Balochistan lack the veterinary services. Only (17%) of livestock have the access to veterinary services in the province (Afzal, 2005). This exacerbating situation spoil the hard work of livestock holders especially small ruminants holder. the situation shifted the small ruminants holders to majorly rely of the mercy of nature (Harrington, 1992). Since, there is no efforts made to put the grey agrarian economy to corporate forming, the result comes in the shape of low productivity and it pushes the livestock holder to extreme poverty and helplessness (Bravo, 2000). No proper study has been conducted to estimate the damage which occurs due to poor veterinary services in the province. Research work on this issue has been neglected uprightly (Humera *et al.*, 2010).

Hypothesis$_1$: There is positive relation between veterinary services and livestock economy of Balochistan

B. Poor Veterinary extension services

Livestock stock is always supported by the extension services in the world. All large and medium economies of the world have developed with the assistance of veterinary extension services. Non availability of extension services makes it difficult to rear the livestock especially small ruminant (Bonfiglioli, 1994). Agrarian economy of Balochistan chiefly depends on the growth of livestock sector especially small ruminants, and the livelihood of all type of farmers predominantly rely on the development of livestock (Haider, 2008). Extension services play vital role in the growth of economy as livestock holders can treat his animals on the door steps (Chantalakhana and Devendra, 2002). Poor veterinary extension services are one of the causes of low productivity in the province (Mansell and When, 1998). Accelerating the extension services will result a prosperous and flourish economy in developing world (Gbkhale *et al.*, 2002). Poor extension services affect the women at the most, as they want to address their sick animal cure at their door step (Shafiq, 2008).

Hypothesis$_2$: There is a positive relationship between veterinary extension services and livestock economy of Balochistan.

C. Improper medicine supply (IMS)

Livestock is the backbone of Balochistan. Improper medicine supply suppresses it to manifold.

Hence, over the years, the livestock economy of Balochistan has never been achieved its milestones. There is acute shortage of livestock medicine supply (Giles and Baig, 1992). This ultimately is pushing the livestock sector to downward. Balochistan provides the major share of mutton to rest of country. There is huge gap between the demand and supply of mutton market. This gap is increasing as there is proper effort made to support and sustain the economy (DeMaar *et al.*, 1995). The situation of drought is frequent in the province. Drought emerges as to weaken the livestock (Deere, 2005). Additionally, improper medicine supply. World economy emphasis on the availability of medical equipment, diseases cure treatment and tackling of health prone issues (Fontanaand Natali, 2008).

Hypothesis 3: The more the improper medicine supply for livestock, the more the weaken the livestock economy in Balochistan.

MATERIALS AND METHODS

This research was conducted in (20) districts of Balochistan-Pakistan during December 2016- to April 2017 under the University of Balochistan, Quetta-Pakistan. Based on Morgan Table the sample size estimated 360 livestock holders consisting Baloch and Pashtoon tribes relating to nomadic, transhumance, sedentary families and other common livestock holders who involve in livestock rearing activities. There were (360) respondents out of which (300) returned questionnaires. The respond rate was 80%. Demographical age of respondents was averagely 39.8 years (a mean of 4.52, S.D. =3.4) years. Data is collected through questionnaire survey technique and measured with five point Likert scale. The results were then analyzed by using the simple statistical tool. Basically twenty (20) Districts out of 33 Districts of Balochistan were selected considering the different factors. The selected districts were Noshki, Hub, Kallat, Khuzdar, Zhob, Loralai, Killa Saifullah, Musa Khel, Killa Abdullah, Awaran, Punjgoor, Chaghi. The design and implementation as survey is to ensure about the generality of the results. Pilot study was conducted in order to remove the deficiencies in the questionnaire and to estimate the SD of population. SPSS 23.0, statistical tools were employed to test study hypotheses. The control variables consist of district, age, number of livestock, marital status, occupation, time span in livestock business, and monthly income from livestock business.

RESULTS AND DISCUSSION

All items encumbered significantly (> .50) on their respective factors which was an indication of reliability. Cronbach's alpha (Cronbach, 1951) values for all scales exceeded the minimum verge level of .80 thus indicating the reliability of all scales used in this study (Table 1). The research examined the relationship among the construct of livestock of Balochistan with special reference to sheep and goat in a sample of area of Balochistan. Study discovers that substantially large population rears small ruminants (89%) as a source of income and survival. Only 11% livestock holders have buffalos in under study area whereas 27 % people have cattle at their homes. Camel, horses, Mule, donkey and other livestock are also rare in the sample area. Proposed hypothesis received considerable support. Research was practically indigenous and it was descriptive and causative in nature. Majority of inhabitant in livestock sector illiterate or have very low education (Illiterate 54%, primary, middle and metric consist of 36%, only 6% are intermediate or graduate) causing low productivity in livestock.

Table 1: Pearson correlation Matrix for development, Potential prospects and Constraints.

	Mean	SD	Variance	Correlations				b
				1	2	3	4	
1. Poor Veterinary services (PVS)	3.4	.75	1.5	1				0.89
2. Poor Veterinary extension (PVE)	4.1	.59	1.2	.90	1			0.91
3. Improper medicine supply (IMS)	3.9	.67	1.3	.85	.87	1		0.88
4. Impact on livestock economy(ILE)	3.5	.47	0.9	.89	.83	.79	1	0.81

**. All items are Correlated significantly at the 0.01 level (2-tailed).

b =Cronbach Alpha (Cronbach, 1951).

It was hypothesized that potential and future prospects of small ruminants would be positively related to development. Hypotheses were supported by the results. Nevertheless, finding suggests that livestock sector of Balochistan can never be flourishing and prosper until a proper veterinary and health issues must be addressed. Results indicate significant positive co-relationship. Poor Veterinary services (PVS) and Poor Veterinary extension (PVE) ($r = 0.90$, $p < 0.01$) proved significant and positively supports the H_1. Hypothesis$_1$ investigated the relationship Poor Veterinary services (PVS) with Impact on livestock economy (ILE). Poor Veterinary services (PVS) with Improper medicine supply (IMS) ($r = 0.85$, $p< 0.01$) and also positively relates with Impact on livestock economy (ILE) (r= .89, p<0.01).

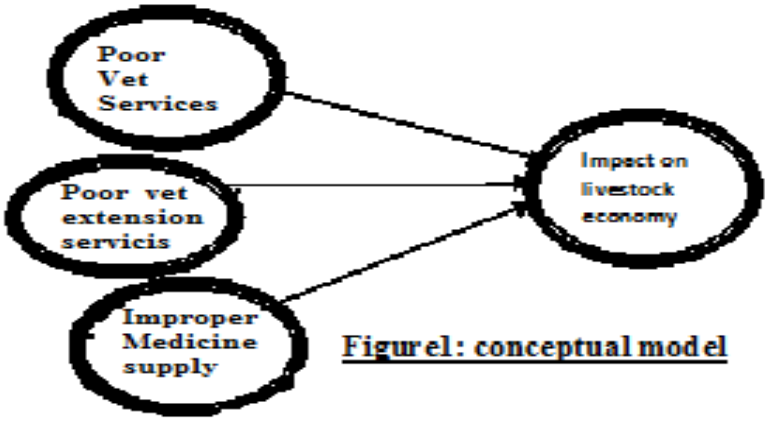

Figure1: conceptual model

Poor Veterinary was calculated to predict whether the hypotheses are supported by the study or not. It is observed that PVS (β = .65), has a significant and positive relationship with ILE at 0.05 level. PVE (β =-.15), and IMS (β = -.12), have significant effect on ILE (.000) and PVE (.000) are significant predictors (or related significantly) of overall development. The standardized beta explains the power and track of the relationships between PVS and ILE. More the Poor Veterinary services to the more the depressing impact on the economy. The positive coefficient (correlation) for each independent variable suggests that high value on this variable correspond to higher scores on the dependent variable (i.e. the impact on livestock economy). The R^2 = .604, R^2 change = .06 is the proportion of variation in the dependent variable that is explained by the independent variable. This study examined the relationship among, PVS, IMS, PVE and ILE in livestock of Balochistan with special reference to small ruminants. Proposed hypotheses received considerable support. The study fills the gap of the past studies in the context to assess the relationship among PVS, IMS, PVE and ILE. It was hypothesized that impact on livestock economy would be positively related to other variables; finding indicates a vital characteristic that enables the development of livestock sector. Furthermore, there was a positive relationship between development and other independent predictors. Finding also indicates livestock has the potential for common people working in livestock of Balochistan especially for small ruminants. The results were in line with previous studies, where development was a strong correlate of future prospects. The findings of this study supports impact a positive relationship with PVS, IMS, and PVE. The assumption of researcher and policy makers is so called passive in agriculture (Qaseem, 2002). These sources can be utilized for family or for the guests, even, when facing terrible times. Increased consumption of livestock products would improve the nutritional status of people living in the country (Ayele and Peacock, 2003).

CONCLUSION

Animal health is an important issue in rural settings. Theses societies take their livestock as they care their relations. Diseases in livestock animals are also prevalent which cause not only the financial loss to livestock holders but it is also like a missing a member in the family. However, they cannot avoid it (Nawaz, 1995). Additionally, there are no proper veterinary services and improper medication are catastrophic for the growth of livestock herds in rural settings. This ultimately depresses the livestock economy and does not allow the livestock holder to prosper (Thornton *et al.*, 2002).

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