Original Article

Socio-demographic factors of pig farmers associated in transmission of taeniosis/cysticercosis

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Introduction: Pig farmers' socio-economical and environmental conditions that comprise the risk factors for the contraction of cysticercosis in Nepal are as the socio-economic condition of pig farmers is very poor. They are ignorant about health and hygiene. In Terai districts, 80% farmers keep pigs in the open field. Most of the families of the pig rearing communities do not have latrines. They use open field for defaecating. Free range feeding of pig is quite common all over Nepal traditionally. The unhygienic disposal of the waste helps the problem to be graver.
Method: This study was carried out in three VDCs i.e. Tindobate VDCs, Thumpokhara VDC, Jagatradevi VDC and Walling Municipality in Syangja district. Household keeping pigs farmers were randomly selected from villages in the district. About 437 households and pig farming area were surveyed.
Results: This contamination of soil and water contributes greatly for the parasitic infestation of both pig and human. Most of the pigs are kept inside the house at night and are fed on kitchen wastes and excreta. This is the important factor that is co-related with the high prevalence of parasitic infestations like Taeniasis in pigs and humans.
Conclusion: Pig husbandry system should be improved. Mass awareness education programmes for controlling parasitic diseases in general, and taeniasis and cysticercosis in particular should be launched in all pig pocket production areas of the country. Social upliftment programmes like adult education, toilet construction, safe drinking water supply, gender indiscrimination in the pig husbandry as a source of poverty elimination must be carried out.

Introduction

Sociological aspect of pig farmers

Pork meat demand is increasing day by day in urban and same-urban area but pig farming patterned of the farmers condition is very poor, un-hygiene and unsystematic. Present study area Brahmins, Chhetries, Magars, Gurung, Newars and Rai are the major ethnic groups living their. Basically pig farming occupation is followed by these ethnic group like: Magars, Gurungs, Rai, Limbu, Sarkis and Kashai (butchers). Among them Magar communities are those ethnic groups who principally rare pigs and consume pork as their major meat dishes. Most of small-scale pig farming ethnic groups live in the hilly geographical region and then in the terai and few in mountain regions. In village area those who are doing pig farming dose not have a toilet facility. They use open field for defecating. They keep pig or pork for sell and own consumption purpose. But their social environment is poor and unhygienic sanitary condition, all these factors effect their health.

Objective

To carryout socio-economic condition of pig farmers.
To evaluate pig husbandry practices, pork consumption habits, sanitation, human knowledge about taeniosis/ cysticercosis.

Methodology

This study was carried out in three VDCs and one municipality i.e. Tindobate VDCs, Thumpokhara VDC, Jagatradevi VDC and Walling municipality of Syangja district. Household keeping pigs farmers were randomly selected from villages in the district. These sampled were depending on the accessibility to the household and the willingness of the family to cooperate. About 437 households and pig farming area were surveyed.

Results

Pig farmers social/environmental condition

In Syangja district magar community people lived in upper lake side, the total population of Syangja is 3,17,194 out of them 20.3% are magar. That area road, water facilities, health sector and education centre were not available, if they need those things they had to walk 4-5 hour for up and down. Out of 205 houses interviewed only 5 pig farmers family were passed 10 class, other wise most of the people were uneducated and other 125 houses were uneducated because shortage of schools, 45 houses were unable for poor economic condition and 30 houses were not interested in education.

That area pig farmers socio-economical condition is very poor and they were ignorant about health and hygiene. Most of the public houses are very simple and single double floor which is made by stone, mud, khar (dried fodder grass) and wood. Almost pig rearing community does not have a toilet facility. They use open field for defecating and very unhygienic disposal of the waste. In Syangja district most of the houses has 2-3 pigs. It was found that all the farmers rear black local breed pigs but not on large scale. Most of the individual farmers rear one to eight pigs generally.

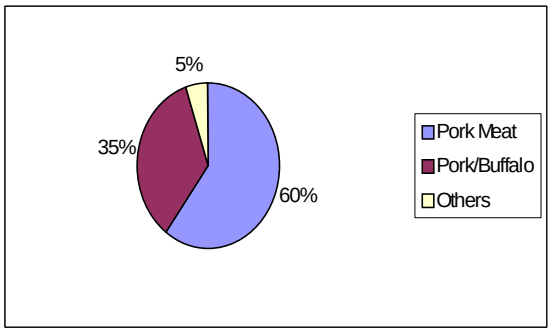

Fig. 1: Meat consumption pattern in rural farm community of Syangja district.

As shown in the in our survey area 60% people were consumption port meat only they keep pig for selling and own consumption purpose, 35% they eat both port and buffalo and very few 5% eat other meat like chicken, goat and other *(Fig. 1).*

2. Types of pigs

During the survey we found that people keep different types of the pigs i. e. breeders, piglets and Fatteners *(Fig. 2).* In study area 346 (54.66) breeders, 148 (23.38) piglets and 139 (21.95) fatteners were found among the responded people *(Table 1).*

Table 1: Distribution of types of pigs in study area.

S. N.	Types of pigs	Total	%
1.	Breeders	346	54.66
2.	Piglets	148	23.38
3.	Fatteners	139	21.95
	Total	633	

Table 2. Purpose of keeping pigs

S. N.	Aim of Keeping Pigs	Tindobate		Tulsibhanjyang		Jagtradevi		Walling		Total	
		No	%	No	%	No	%	No	%	No	%
1.	For Sale	16	7.88	12	17.41	64	70.32	24	32.87	116	26.54
2.	For Home	28	13.79	31	44.28	12	13.18	27	36.98	98	22.42
3.	Both	159	78.32	27	38.57	15	16.48	22	30.31	223	51.02
4.	Total	203		70		91		73		437	

Purpose of keeping pigs

Pig farmers main aim of keeping pigs was seen both home use and for selling purpose. Overall 27% people were keep for selling purpose only, 23% of the responded people keep pig for home use and 51.02% of the pig were kept for both purpose *(Table 2)*.

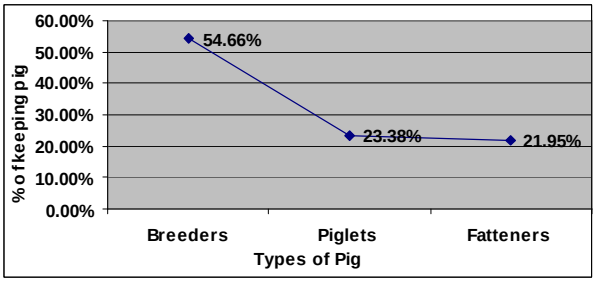

Fig. 2. Distribution of types of pigs in study area.

Feeding systems and grazing condition of the pigs

a. Grazing condition: During the survey it has been observed that most of the pig farmers 70% were found to graze pig in open field *(Fig. 3)*. People had the habit of defecating in open field. These practices were responsible for contamination of soil as well as near by water stream also. The most of the pig during night were found inhabiting practically in the house owner and feed on kitchen wastes and excreta. These revealed the important factors co-relating the high prevalence of parasitic such as *Taenia solium* and bacteria infection in pigs as well as in human. Only 27% farmers had pig sty, where they rear and feed pigs. But this was also found most unhygienic and poor condition.

b. Feeding system: In Survey area we noticed three types of feeding systems i.e., indoor, semi-intensive, free-range. Basic of the above fig no. 3 open grazing system is famous and common in all the pig rearing area.

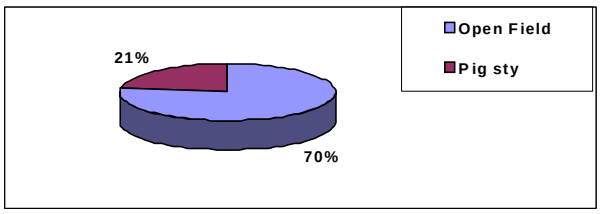

Fig. 3. Pig grazing place.

Among these semi-intensive system is applied by maximum 60% people. In this process day time they free their pig grazing in open field and only night time they kept in sty, only 21% responded were kept their pig inside the sty but the environment and sanitation condition of sty was very poor and unhygienic and free-range system is less 10%.

Pattern of pork consumption

Among the responded people, the pork meat was consumed in different way. Total 437 responded, 68.19 % people were consumed cooked pork, 19.22% were consumed Fried, 8.23% consumed raw meat and only 4.34% people consumed Boiled meat.

Taeniasis in Syangja

Cross-sectional surveillance study on human intestinal helminthic parasites in three VDC and one Municipality of Syangja district in Pig farmers community was carried out by direct microscopic examination of human stool samples which showed the prevalence rate of the intestinal parasitic infection 83% out of 180 stool samples.

The prevalence of porcine cysticercosis was observed 44% in Tulsibhanjyang *(Fig. 4)*.

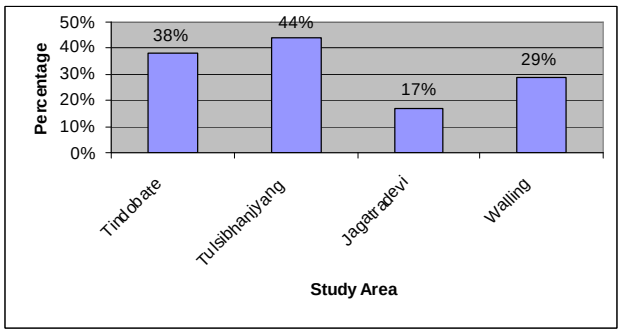

Fig. 4. Locality wise Taeniosis in Syangja.

Risk factors

The risk factors associated with the transmission of porcine cysticercosis includes living condition, animal husbandry system etc. The taeniasis infection was found to be very common among people that who consume barbecued pork. Such habit of consuming barbecued pork was found to be prevalent among the special ethnic communities like Magar, Rai, Tamang and Limbu. The tendency of consuming barbecue pork was found increasing in the younger generation of other ethnic groups viz, Newar, Chhetry and Brahman etc.

During questionnaire survey it was found in some area that none of the households were using toilet. All the people of disposed their night soil on the open field, which was unhygienic practice. They didn't pay any cost for their own toilet. Many people in rural areas don't have access to toilets so defecation by people in rural areas frequently takes place

in open fields, which facilitates maintenance of the parasite in the environment. Porcine infection in Nepal has been associated with poverty, latrines and free access by scavenging pigs to human faeces.

Prevention and control

Taenia solium is a predominant food-borne parasitic zoonosis (FBPZ) in Nepal. Using the PRECEDE framework, as defined by Green and Kreuter, the factors behind the high incidence of this disease can be identified, which help to define the actions necessary to control *T. solium.* An epidemiological assessment based on hospital data alone showed that *T.solium* is an endemic problem in urban Nepal that must be addressed. Based on behavioral and environmental assessments (Steps 1 and 2 of PRECEDE-PROCEED), following action objective has been defined[2].
Train meat producers and sellers to detect contaminated pork and avoid selling it; improve pig husbandry to limit the animals' access to human faeces and construct hygienic model slaughterhouses.
Health education has been shown to be highly effective since people become aware of the importance of human and porcine cysticercosis and the possibility of eliminating it. The life cycle can be controlled by avoiding swine cysticercosis[1].

Discussion

The disease in human and pigs is an ancient parasitic disease rooted in developing countries and emerging as a major health problem of global dimension (Sciutto et al., 2000). The infection is also present in India, Pakistan, North China, Thailand and Nepal (Scantz et al., 1992). Taenia cysts first time observed in pig meat slaughtered in Kankeshwori, Kathmandu[5,6].
Taenia solium cysticercosis infection in pigs and humans is acquired through ingestion of the eggs passed in the faeces of a human tapeworm carrier. Transmission is most intense in rural population in association with traditional pig-raising practices, inadequate sanitation, ignorance and poverty. Lack of adequate slaughterhouse surveillance and the existence of informal, commercialization systems allow infected pork to be consumed. *Taenia solium* not only produced severe zoonotic diseases (Joshi 2005) but also causes widespread economic losses to the pig husbandry[4].
Taenia solium cysticercosis seriously affects human health when localized in the central nervous system and causes great economic loss in pig husbandry in rural areas of endemic countries. But still there is no published data available regarding economic losses due to porcine cysticercosis in Nepal.
The available data on both taeniosis, human and porcine cysticercosis indicated that, the disease is very severe and developing as a serious public health importance.

Conclusion

The rural slaughterhouse with its simple hygienic standard should be adapted to the socio-economic status of the community. There is an urgent need to study the existing situation of feeding animals and slaughtering practices. Make aware to the people about health and hygienic. Health awareness is needed to the remote area people about disease, which is transmitted from the animals to human like a *Teaniasis/Cysticercosis*[3].

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