



Exploring Possibilities of Public Private Partnership for Leptospirosis Control Programme in South Gujarat

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ABSTRACT

Introduction: Leptospirosis is seasonal epidemic in South Gujarat and having high case fatality rate since 1994 within young productive tribal population. Private practitioners are nearest available for consultation to these workers. The study was conducted to assess the knowledge, practice, felt need for training and to explore the possibilities of public private partnership to control Leptospirosis in south Gujarat region.

Material and Methods: A cross sectional study was carried out by using pre-designed and pre-tested semi-structured questionnaire during September 2013. Private practitioners practicing at Kamrej and Mahuva block of south Gujarat were contacted. Descriptive analysis was done to analyse the data.

Observation: Out of 45 private practitioners contacted, 5 were Post Graduates, 39 were Graduates, and 1 was unqualified. Among them, 14 were Allopathic, 16 Ayurvedic, 14 Homeopathic. Most of the practitioners (97.83%) heard of Leptospirosis. More than half (53.33%) of the practitioners were not having knowledge of causes of Leptospirosis, 26.67 % were having correct knowledge while around 20 % were having partial knowledge of causes of Leptospirosis.

Conclusion: This study envisioned the possibility of partnership with private practitioners. Basic training can help to sensitize private practitioners towards Leptospirosis control activity.

Key Words: Leptospirosis, Public Private Partnership, South Gujarat, Private Practitioners

INTRODUCTION

Leptospirosis is a worldwide zoonotic disease and globally emerging public health problem ^{1,2}, present in developing and industrialised countries ³, which is also reported in South Gujarat and having high case fatality rate which ranges from 10 % to 30% from 1994. In South Gujarat, Surat and Tapi districts are reporting maximum number of cases followed by Navsari and Valsad in 2012 & 13. ^{2,4}

Humans are infected by direct contact with infected animals or indirectly by contact with a contaminated environment. ^{2,5-8} The urban cycle is maintained by the Norwegian rat (*Rattus*

norvegicus)⁹⁻¹¹ Leptospirosis causes a wide spectrum of clinical manifestations, including subclinical infection, self-limited anicteric febrile illness with or without meningitis, and a severe and potentially fatal illness known as Weil disease that presents as hemorrhage, renal failure, and jaundice. ^{7,12,13} Leptospirosis is treatable with antimicrobial agents, including penicillin and Doxycycline, and knowledge of this diagnosis may significantly reduce morbidity and mortality. ¹² Antibiotic administration (especially before the 7th day of illness) reduces length of hospitalization and leptospiruria. As per guidelines treatment with penicillin or tetracycline (in children > 9 years of age)

should be instituted as soon as the diagnosis is suspected.⁸ Having a wide range of symptoms early identification can be possible only when suspect cases reported early at first contact with health system. Private practitioners play crucial role at remote rural and tribal areas as many a time they are the only near most available health provider for farm workers.

Review of available literature suggests that in prevention of Leptospirosis, awareness on disease existence, knowledge and health behaviours play a key role.¹⁴ It would be interesting to assess basic awareness on disease existence and practices of private service providers.

The study was conducted to assess the knowledge, practice of private practitioner for management of Leptospirosis cases, to review the felt need of private practitioners for training Leptospirosis management and to explore the possibilities of Public Private Partnership (PPP) to control Leptospirosis in south Gujarat region.

METHODOLOGY

The study was an exploratory cross sectional study. Two high reporting blocks Mahuva and Kamrej block were selected as to find out maximum target private practitioners. Transect walk at total of three PHC's field practice area [Karchelia PHC, Kharavan of PHC (Mahuva block) & Orna PHC (Kamrej block)] were done to prepare rough map of the area. Local authorities were contacted to collect information on availability of private practitioners. Private practitioners were enrolled in the study by using census sampling. The study included all the Ayurvedic, Homeopathic, Allopathic and unregistered practitioners to meet in personal. Personal meeting with each practitioner was arranged with prior appointment. Study objectives were discussed and willing (all those were approached) practitioners (n=45) were enrolled with the study. Private medical practitioners were asked questions related to agent, transmission, natural history, diagnosis and treatment of Leptospirosis. Their answers were given 0 score if incorrect and 1 if correct. Correctness of answers was decided by comparing answers with standard guidelines for diagnosis and treatment for Leptospirosis. Knowledge about causes and mode of transmission had 3

questions each whereas knowledge about prophylaxis and treatment were assessed by scoring questions on antibiotics, their doses and timings. Then the scores were categorized into different categories of correct/partial or no knowledge for the purpose of describing results. The study was conducted in the month of September 2013.

A pre-designed and pre-tested semi-structured questionnaire were used for data collection. Basic knowledge and practices of practitioners in case of Leptospirosis were assessed with descriptive variables. Data were entered in MS excel 2007 and analysed with the help of Epi info 3.5.1.

RESULTS

Private practitioners attended total of 23 Leptospirosis cases in the current rainy season of 3 months. Though numbers of practitioners were high in Orna PHC field practice area, cases attended in last 3 months were only 1 while Practitioners in Karcheliya PHC area had attended around 15 cases of Leptospirosis during July to September 2013.

Qualification of private practitioners and willingness for training

Total 45 private medical practitioners could be approached who were practicing in the field areas of following primary health centres- Orna, Karcheliya and Kharvan. Most practitioners were AYUSH (68.9%) and the rest were allopathic (31.1%). 1 unqualified practitioner could also be traced out. Majority (89.0%) private practitioners were showing willingness to get training for Leptospirosis disease and its treatment. (Table - 1)

Knowledge about Leptospirosis among private practitioners

More than a half (53.3%) were unaware about the exact cause of Leptospirosis. Mode of transmission was known by most (82%) of private medical practitioners. About half (46%) of the private medical practitioners were aware about prophylactic medicine availability whereas major (54%) proportion was unaware about prophylactic treatment availability. When private medical practitioners were asked about treatment of Leptospirosis, it was observed that a small (14%) proportion of private medical practitioners knew about Injection Crystalline Penicillin. (See Table 2)

Table 1: Qualification of private practitioners and willingness for training (n=45)

Name of PHC	Allopathic (n= 14) (%)	Ayurvedic (n= 16) (%)	Homeopathic (n= 14) (%)	Unqualified (n= 1) (%)	Willingness of Training	
					Yes (n= 40) (%)	No (n= 5) (%)
PHC Orna	7 (25)	7 (25)	13 (46.43)	1 (3.57)	25 (89)	3 (11)
PHC Karcheliya	7 (53.48)	6 (46.72)	0	0	11 (85)	2 (15)
PHC Kharwan	0	3 (75)	1 (25)	0	4 (100)	0

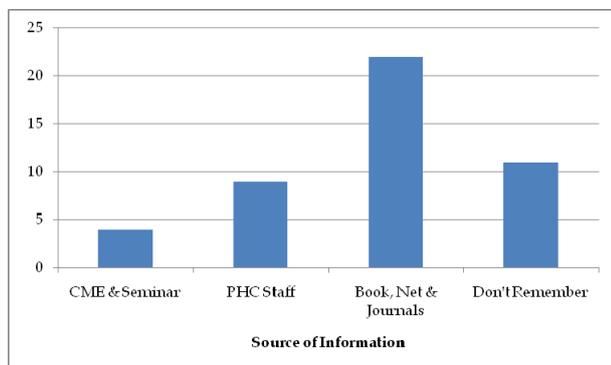
Table 2:-Knowledge about Leptospirosis among private practitioners (n=45)

Name Of PHC	PHC Orna	PHC Karcheliya	PHC Kharwan
Knowledge about Causes of Leptospirosis			
Correct Knowledge	5 (18)	6 (46)	1 (25)
Partial Knowledge	2 (7)	4 (31)	3 (75)
No Knowledge	21 (75)	3 (23)	0
Knowledge about Mode of Transmission			
Correct Knowledge	23 (82)	9 (69)	2 (50)
Partial Knowledge	1 (4)	0	2 (50)
No Knowledge	4 (14)	4 (31)	0
Knowledge about Doxycycline Prophylaxis			
Yes	13 (46)	12(92)	4 (100)
No	15 (54)	1 (8)	0
Knowledge about Treatment			
Inj. C P	4 (14)	4 (31)	0
Other antibiotics	15 (54)	7 (54)	3 (75)
Do not Know	9 (32)	2 (15)	1 (25)

* Inj CP = Injection Crystalline Penicillin

Source of information about Leptospirosis among private practitioners

It was observed that source of information about Leptospirosis was books, internet and journal articles for about half (48.8%) of the private medical practitioners while other sources were PHC staff, CME and seminar. (See Graph 1)



*CME = Continued Medical Education

Graph 1: Source of information about Leptospirosis among private practitioners (n=45)

DISCUSSION

The purpose of this study was to assess the knowledge, practice of private practitioner for management of Leptospirosis cases and to review the felt need of private practitioners. Farmers or farm workers are mostly affected who commonly consult private practitioners available.

Most practitioners were AYUSH or allopathic. Most of private medical practitioners had correct knowledge about the locally occurring disease. Mode of transmission was known by most of pri-

vate medical practitioners. Most of the respondents were not aware of the main mode of transmission, which is through contaminated water. But only a third knew about this mode while half of them knew that the direct contact with urine from infected animal could cause infection. Knowledge gap was also seen in studies conducted by Agampodi SB et al ¹⁴, Reich MR et al ¹⁵ and Navegantes de Araújo W durind their research.¹⁶

Majority (54%) knew the use of other antibiotics when a measurable (32%) number of private medical practitioners did not had any knowledge about the treatment. Only 14% of the private practitioners knew about the correct treatment of Leptospirosis according to standard guidelines. Adult patients should be given Inj. Crystalline Penicillin 20lacs IU i.v. every 6 hourly after negative test dose (ANTD) for 7 days ¹⁷ which can contribute in saving productive lives.

High dependency on internet and journal articles was observed following books related to medical literature. A one fifth of participants (20%) were obtaining knowledge through PHC staff. CME and Seminar were source of knowledge for a small (8.8%) proportion of private medical practitioners.

Majority private practitioners were showing willingness to get training for Leptospirosis disease and its treatment suggesting of scopes of such sessions in future.

The private business sector is recognized as an important stakeholder in international development, especially in the health sector. Public-Private Partnerships (PPP) are being pursued as a way to leverage ideas, resources, and capabilities to achieve public health goals. ^{15, 18}

In a public-private partnership, government agencies and private sector organizations share in the financing and operations of a program or project to accomplish important public goals.¹⁹ PPP refers to a diverse range of collaborations between private and public-sector entities with varying types of participants, governance, management, legal status, policy-setting, contributions and operations.²⁰ Different forms of PPP have been increasingly studied as a means of mobilising resources to enhance health system capacity & sustainability.²¹

In countries like India, where health care users face a choice between overstretched public systems or expensive and unregulated private services, successful public-private partnerships could harness the strengths and mitigate deficiencies of each sector. In India, PPP are seen as a pragmatic response to one of the most highly privatised healthcare systems in the world.²² Given the overwhelming presence of the private sector in health, various state governments in India have been exploring the op-

tion of involving the private sector and creating partnerships with it in order to meet the growing health-care needs of the population.^{23,24} A joint initiative from public and private both may work well. PPP in health is therefore an efficient way out. NRTN, RSBY, and FPS under PPP come extremely effective when used together in a combination.¹

CONCLUSION

Private practitioners lack the correct knowledge for management of Leptospirosis cases. With the lack of official channel to share guidelines, they were depended upon random sources to enrich the knowledge of Leptospirosis case management. Therefore, official information sharing at regular interval would help to adhere national Leptospirosis guidelines. Basic training of private practitioners in high-risk areas can help to involve private practitioners in high suspicion, early diagnosis, treatment and establish referral linkages between referral centers for Leptospirosis control activity. As private practitioner expressed their interest for training, there is definite future scope of Public Private Partnership for Leptospirosis control in south Gujarat region.

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REFERENCES

- Dutta S, Lahiri K. Is Provision of Healthcare Sufficient to Ensure Better Access? An Exploration of the Scope for Public-Private Partnership in India. *Int J Heal Policy Manag* [Internet]. 2015;4(7):467-74. Available from: http://www.ijhpm.com/article_3006_616.html
- Goris MGA, Boer KR, Kliffen SJ, Hartskeerl RA, Europe I, Surveillance P, et al. Human Leptospirosis Trends, the Netherlands, 1925-2008. *Emerg Infect Dis* [Internet]. 2013; 19(3). Available from: www.cdc.gov/eid
- Richard S, Oppliger A. Zoonotic occupational diseases in forestry workers - Lyme borreliosis, tularemia and Leptospirosis in Europe. *Ann Agric Environ Med*. 2015; 22(1):43-50.
- Allan KJ, Biggs HM, Halliday JEB, Kazwala RR. Epidemiology of Leptospirosis in Africa: A Systematic Review of a Neglected Zoonosis and a Paradigm for "One Health" in Africa. *PLOS, Neglected Tropical Dis*. 2015;1-25.
- Bourhy P, Girons I Saint, Picardeau M. Random Insertional Mutagenesis of *Leptospira interrogans*, the Agent of Leptospirosis, Using a mariner Transposon. *J Bacteriol*. 2005;187(9):3255-8.
- Brown P, McKenzie M, Pinnock M, D M. Environmental Risk Factors Associated with Leptospirosis among Butchers and Their Associates in Jamaica. *Int J Occup Environ Med* [Internet]. 2011; 2(1):47-57. Available from: www.theijocm.com
- Dechner A. Regional Review A retrospective analysis of the Leptospirosis research in Colombia. *J Infect Dev Ctries*. 2006;
- Tullu MS, Karande S. Practitioners' Section Leptospirosis In Children: A Review For Family Physicians. *Indian J Med Sci*. 2015;63(8):368-78.
- Martins G, Lilenbaum W. The panorama of animal Leptospirosis in Rio de Janeiro, Brazil, regarding the seroepidemiology of the infection in tropical regions. *BMC Vet Res* [Internet]. 2013; Available from: <http://www.biomedcentral.com/1746-6148/9/237>
- Reports C, Andreadis EA, Agaliotis GD, Mousoulis GP. Leptospirosis presenting in a woman with fulminant hepatic failure from Wilson's disease: a case report. *J Med Case Rep* [Internet]. 2010;16-8. Available from: <http://www.jmedicalcasereports.com/content/4/1/256>
- Mauron C, Goarant C, Perez J, Brescia F. Rodent Abundance Dynamics and Leptospirosis Carriage in an Area of Hyper-Endemicity in New Caledonia. *PLOS, Neglected Tropical Dis*. 2011;5(10).
- Sanders EJ, Aye TIN, Spiegel RA, Weyant RS, Bragg SL. Increase of Leptospirosis in dengue-negative patients after a hurricane in Puerto Rico in 1966. *Am J Trop Med Hyg*. 1999;61(3):399-404.
- Desai S, Treeck U Van, Lierz M, Espelage W, Zota L, Sarbu A, et al. Resurgence of Field Fever in a Temperate Country: An Epidemic of Leptospirosis among Seasonal Strawberry Harvesters in Germany in 2007. *Clin Infect Dis*. 2009;691-7.
- Wasiński B, Dutkiewicz J. Leptospirosis - current risk factors connected with human activity and the environment. *Ann Agric Environ Med*. 2013;20(2):239-44.
- Reich MR. Introduction [Internet]. *Public-Private Partnerships for Public Health*. 2002. 1-15 p. Available from: http://www.populationmedicine.org/content/pdf/MReich_Public%5CnPrivate%5CnPartnerships_book.pdf#page=12
- Navegantes de Araújo W, Finkmoore B, Ribeiro GS, Reis RB, Felzemburgh RDM, Hagan JE, et al. Knowledge, attitudes, and practices related to Leptospirosis among urban slum residents in Brazil. *Am J Trop Med Hyg* [Internet]. 2013 Feb [cited 2014 Aug 2];88(2):359-63. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3583330&tool=pmcentrez&rendertype=abstract>
- NCDC National Centre for Disease Control. Programme for Prevention and Control of Leptospirosis National Guidelines Diagnosis, Case Management Prevention and Control of Leptospirosis Programme for Prevention and Control of Leptospirosis National Guidelines Diagnosis, Case Management Prevention. Delhi; 2015.
- Vian T, Richards SC, McCoy K, Connelly P, Feeley F. Public-private partnerships to build human capacity in low income countries: findings from the Pfizer program. *Hum Resour Health* [Internet]. 2007;5(1):8. Available from: <http://www.human-resources-health.com/content/5/1/8>
- Holden DJ, Reiter K, O'Brien D, Dalton K. The strategic case for establishing public-private partnerships in cancer care. *Heal Res Policy Syst* [Internet]. Health Research Policy and

- Systems; 2015;13(1):44. Available from: <http://www.health-policy-systems.com/content/13/1/44>
20. Huang TT-K, Ferris E, Crossley R, Guillermin M, Costa S, Cawley J. A protocol for developing an evaluation framework for an academic and private-sector partnership to assess the impact of major food and beverage companies' investments in community health in the United States. *BMC Obes* [Internet]. *BMC Obesity*; 2015;2(1):36. Available from: <http://www.biomedcentral.com/2052-9538/2/36>
21. Wong ELY, Yeoh EK, Chau PYK, Yam CHK, Cheung AWL, Fung H. How shall we examine and learn about public-private partnerships (PPPs) in the health sector? Realist evaluation of PPPs in Hong Kong. *Soc Sci Med* [Internet]. Elsevier Ltd; 2015;147:261-9. Available from: <http://dx.doi.org/10.1016/j.socscimed.2015.11.012>
22. Ganguly P, Jehan K, de Costa A, Mavalankar D, Smith H. Considerations of private sector obstetricians on participation in the state led "Chiranjeevi Yojana" scheme to promote institutional delivery in Gujarat, India: a qualitative study. *BMC Pregnancy Childbirth* [Internet]. 2014;14:352. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=4289232&tool=pmcentrez&rendertype=abstract>
23. Reddy S, Mary I. Rajiv Aarogyasri Community Health Insurance Scheme in Andhra Pradesh, India: a comprehensive analytic view of private public partnership model. *Indian J Public Health* [Internet]. 2013;57(4):254-9. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24351388>
24. Planning Commission. Eleventh Five Year Plan (2007-2012) Volume 2: Social Sector [Internet]. Vol. II, Government of India. 2007. 237 p. Available from: http://planningcommission.nic.in/plans/planrel/fiveyr/11th/11_v2/11th_vol2.pdf