

Status Paper

Veterinary Education in Pakistan: Past Scenario and Future Requirements

ZAFAR IQBAL¹, GHULAM MUHAMMAD[†], ABDUL JABBAR AND ZIA-UD-DIN SINDHU

Departments of Veterinary Parasitology, and [†]Clinical Medicine and Surgery, University of Agriculture, Faisalabad–38040, Pakistan

¹Corresponding author's e-mail: zafaruaf@yahoo.com

ABSTRACT

The affirmative role of animals in the food security for humans, sustainable development and global economies in addition to their immeasurable uses in different societies is an established fact. Therefore, care of animals is an obligation for the survival of human beings. The animal care practices have different standards around the world. Likewise, social status of the veterinarians also has a wide variation from their poor recognition to very high liking in different societies/cultures. Nevertheless, with a major shift of economies from crop sector to livestock in most parts of the developing world has resulted in an increased awareness about the need of strengthening the veterinary education/training. This paper describes the past scenario and future requirements of veterinary education/training in Pakistan.

Key Words: Veterinary education; Pakistan; Livestock

INTRODUCTION

Land erosion, water logging, water shortage and inherited division of land holdings have led to a drastic increase in the number of small farmers. Main reliance of these farmers for their livelihood has, therefore, been shifted to rearing livestock. Livestock is an important sector of agriculture in Pakistan, which accounts for 49.1 percent of agricultural value added and about 11.4 percent of the GDP. The role of livestock in rural economy may be realized from the fact that 30-35 million rural population is engaged in livestock raising, having household holdings of 2-3 cattle/buffalo and 5-6 sheep/goat per family which help them to derive 30-40 percent of their income from it. The livestock include: cattle, buffalos, sheep, goats, camels, horses, asses and mules (Anonymous, 2003-04). Poultry production has emerged as a good substitute of beef and mutton. Its importance can be judged from the fact that according to Livestock Wing of Ministry of Food, Agriculture and Livestock almost every family in rural areas and every fifth family in urban areas is associated with poultry production activities in one way or the other. Growth in the livestock population and livestock products in Pakistan from 1990-91 to 2003-04 are given in Table I and II, respectively.

The pivotal role of livestock in the national economy and food security as evident from the data (Table I & II) warrants an immediate attention not only to upgrade veterinary education/training programs but also reform the existing both private and public livestock/poultry development programs in the light of national needs and international standards. This becomes even more crucial

with the wake of World Trade Organization Agreements. In this paper, a brief history of veterinary education/training in Pakistan, structure of present public sector livestock and dairy development programs, and recommendations based on future needs have been described.

History of Veterinary Medicine and Education.

Veterinary medicine is an ancient profession with a long and distinguished record of service to mankind. The first written evidence of veterinary practice is recorded in Babylonia's Laws of Hammurabi tracing to around 2100 B.C. which contain an entry on the fee for treating a cow or an ass and the penalty for causing the animal to die, i.e., malpractice as well. The Papyrus of Kahun describes veterinary activities in the Nile valley around 1900 B.C. In India, Salihotra, circa 1800 B.C., wrote on horses and veterinary practice. Hippocrates, with his notions on humeral pathology in about 350 B.C., profoundly influenced the development of both human and veterinary medicine. In India, 250 years before the birth of Christ, King Asoka ordered the erection of the first veterinary hospitals. Provision of health care for animals, therefore, has long been on man's agenda.

Formal veterinary education began in the Western world in the 1760s in Lyon and Alfort in France with the establishment of the first Western veterinary colleges. These institutions were established in an effort to reduce the severe economic impact of animal diseases, particularly, rinderpest. The French colleges had high standards for producing well-educated veterinarians who quickly addressed important animal health problems of the day and the new profession flourished. The first Anglophone college was established in London in 1791. Although founded on high principles, it early adopted low standards resulting in a profession with

Table I. Growth in livestock population (million numbers) from 1990-91 to 2003-04

Fiscal year	Buffaloes	Cattle	Goats	Sheep	Poultry	Camels	Asses	Horses	Mules
1990-91	17.8	17.7	37.0	26.3	146.9	1.1	3.5	0.4	0.1
1991-92	18.3	17.7	38.7	27.4	156.2	1.1	3.8	0.5	0.1
1992-93	18.7	17.8	40.2	27.7	182.6	1.1	3.8	0.4	0.1
1993-94	19.2	17.8	42.0	28.3	250.0	1.1	3.9	0.4	0.1
1994-95	19.7	17.8	43.8	29.1	318.8	1.1	4.0	0.4	0.1
1995-96	20.3	20.4	41.2	23.5	350.0	0.8	3.6	0.3	0.1
1996-97	20.8	20.8	42.6	23.7	382.0	0.8	3.6	0.3	0.1
1997-98	21.4	21.2	44.2	23.8	276.0	0.8	3.2	0.3	0.1
1998-99	22.0	21.6	45.8	23.9	278.0	0.8	3.8	0.3	0.1
1999-00	22.7	22.0	47.4	24.1	282.0	0.8	3.8	0.3	0.2
2000-01	23.3	22.4	49.1	24.2	292.4	0.8	3.9	0.3	0.2
2001-02	24.0	22.8	50.9	24.4	330.0	0.8	3.9	0.3	0.2
2002-03	24.8	23.3	52.8	24.6	346.1	0.8	4.1	0.3	0.2
2003-04 (P)	25.5	23.8	54.7	24.7	352.6	0.8	4.1	0.3	0.2

P Estimated (Jul-Mar) Source: Anonymous, 2003-04a

Table II. Growth in livestock products from 1990-91 to 2003-04

Fiscal year	Milk (000 tons)	Beef (000 tons)	Mutton (000 tons)	Poultry meat (000 tons)	Wool (000 tons)	Hair (000 tons)	Bones (000 tons)	Fat (000 tons)	Blood (000 tons)	Eggs Miln. Nos.	Hides Miln. Nos.	Skins Miln. Nos.
1990-91	15481	765	665	151	48.1	7.9	259.0	101.8	40.1	4,490	5.9	32.7
1991-92	16,280	803	713	169	49.3	8.3	265.0	104.5	42.5	4,914	6.0	33.9
1992-93	17,120	844	763	265	50.5	8.1	271.0	107.2	45.1	5,164	6.1	36.0
1993-94	18,006	887	817	296	51.7	9.0	277.0	110.0	47.3	5,740	6.2	37.8
1994-95	18,986	931	875	308	53.1	9.4	283.0	113.0	50.7	5,927	6.3	39.3
1995-96	22,970	898	587	355	38.1	15.6	295.7	110.1	32.0	5,757	7.0	32.7
1996-97	23,580	919	602	387	38.3	16.2	302.3	112.6	32.8	6,015	7.1	34.5
1997-98	24,215	940	617	284	38.5	16.7	309.2	115.2	33.6	5,737	7.3	35.3
1998-99	24,876	963	633	310	38.7	17.3	316.3	117.8	34.4	8,261	7.5	36.3
1999-00	25,566	986	649	322	38.9	17.9	324.0	120.6	40.9	7,321	7.6	37.2
2000-01	26,284	1010	666	339	39.2	18.6	331.4	123.5	41.8	7,505	7.8	38.2
2001-02	27,031	1034	683	355	39.4	19.3	339.4	126.5	42.9	7,679	7.9	39.2
2002-03	27,811	1060	702	370	39.7	19.9	347.6	129.7	44.0	7,860	8.2	40.3
2003-04 P	28,624	1087	723	402	39.9	20.7	356.2	132.9	45.2	8,247	8.4	41.4

P: Provisional (Jul-Mar) Source: Anonymous, 2003-04a

Note: Livestock Population and Products have been revised from 1995-96 onwards due to livestock census held in 1995-96.

limited competence and low public esteem. The first successful colleges in North America were private institutions modeled after British veterinary colleges. The New York Veterinary College was established in 1857 and the Ontario Veterinary College in 1862.

In 1947, Pakistan inherited Punjab Veterinary College (Lahore-Punjab) as the only institution of veterinary education. This college was upgraded and established in 1900 from Veterinary School created in 1882. Later, Punjab Veterinary College was renamed as Punjab College of Animal Husbandry in 1954, College of Animal Husbandry in 1956, College of Animal Husbandry and Veterinary Science in 1965 and College of Veterinary Science in 1977. Meanwhile, in 1962, Faculty of Veterinary Science and Faculty of Animal Husbandry were established as integral parts of the University of Agriculture, Faisalabad-Punjab (UAF). Similar set up for veterinary education was established in newly created East Pakistan Agricultural University, Mymen Singh (now Bangla Desh) in 1962. Two Faculties of Animal Husbandry and Veterinary Sciences were established one each at Sindh Agricultural University, Tandojam- Sindh (1970), and at NWFP (North Western Frontier Province) Agricultural University, Peshawar (1981). Another Gomal College of Veterinary Science was

established at the Gomal University, Dera Ismail Khan (NWFP) in 2000. In 2001, College of Veterinary Science, Lahore was elevated to the position of first University of Veterinary and Animal Sciences (UVAS) in Pakistan. Baqai Veterinary School, Karachi is the only Veterinary Institute in private sector in Pakistan offering DVM degree program.

The first training program offered by the Veterinary School, Lahore (1882) was Veterinary Assistant (VA) Course of two years duration after matriculation (AM) in Urdu, which was later upgraded to General Practitioner and Veterinary Compounder (GPVC) of three years duration AM in Urdu. In 1921, GPVC course was upgraded to Licentiate in Veterinary Practice (LVP) of four years duration AM in English, which was later in 1942 upgraded to Bachelor in Veterinary Science (BVSc) of 4½ years duration AM, renamed in 1954 as Bachelor in Science (Animal Husbandry) {(BSc.(AH))} and same program with an increased duration of five years AM in 1959. BSc (AH) five years duration AM was again renamed as BVSc and BSc (AH) degree in 1965, and once again upgraded to Doctor of Veterinary Medicine (DVM) six years AM degree program in 1971. In contrast to an intricate history of courses/degrees offered time to time by the College of Veterinary Sciences (presently UVAS), DVM degree six

years AM program was offered by the Faculty of Veterinary Science UAF, and Faculty of Animal Husbandry and Veterinary Sciences, Sindh Agricultural University, Tandojam. Faculties of Animal Husbandry UAF, and Animal Husbandry and Veterinary Sciences (Tandojam and NWFP) also offered BSc(AH) six years AM degree program. College of Veterinary Sciences (Gomal University, DI Khan), and Animal Husbandry and Veterinary Science (NWFP Agriculture University) have also started DVM program in 2001 and 2003, respectively. After constitution of Pakistan Veterinary Medical Council (PVMC), all the universities offering DVM six years AM program have switched over to DVM degree eight years AM program, which is a composite form of both B.Sc. (AH) and DVM six years AM degrees. Therefore, at present the only DVM seven years AM degree is being offered by all the institutions of veterinary education in Pakistan.

Mission of Veterinary Institutions. The mission of veterinary institutions is to benefit society through the education of veterinarians and the protection of animal health. This includes the diagnosis, treatment, prevention, and understanding of animal diseases, the conservation of livestock resources, the promotion of public health, and the advancement of medical knowledge through professional and graduate education, research, and service in the broad discipline of veterinary medicine. The veterinary institutions are important resources for the biomedical and agricultural communities, contributing to the development of new knowledge and the training of future scientists.

Goals of the Veterinary Medicine. 1. To provide an excellent comprehensive professional curriculum that educates students in the broad field of veterinary medicine, encourages critical and analytical thinking, and prepares students for life-long learning and professional growth, 2. To promote growth and excellence in research in order to improve the health of animals, assure the wholesomeness of food animal products, and contribute to the understanding of basic mechanisms or animal models of disease, 3. To provide an intellectual and physical environment that fosters creativity and enhances scholarly activity, 4. To sustain state of the art facilities including teaching and research laboratories and a veterinary teaching hospital to educate professional students, support research, train specialists, and serve as referral centers, and 5. To educate future academicians and research scientists by involving graduate students and residents in high quality teaching and research programs.

Problems/Quality of Veterinary Education in Pakistan. In Pakistan, despite the spectacular developments and progress made, all is not well for the veterinary profession. There are serious problems and challenges posed by the political instability, inadequate infrastructure, an indifferent communal mind-set, lack of persistency in state-run policies, etc. etc., which hardly permit achieving the globally acceptable standards of veterinary education. Livestock industry has not flourished to the optimum level

due to these reasons. Poultry industry, however, has progressed well and has emerged as a significant contributor to the national economy of Pakistan. Nevertheless, situation is opposite in most of the developed countries where livestock industry overrides the poultry.

In fact, nutrition, housing, disease control, genetics, and general management of the operations are closely interrelated. Unfortunately, this basic fact was ignored by the policy makers on livestock issues, which is evident from the frequent changes made from time to time in the veterinary education for training graduates who can handle integrated operations in the profession. Consequently, neither DVM graduates nor B.Sc.(AH) graduates were fully trained to address production and health issues together. Moreover, public sector could not afford to simultaneously employ both the graduates. Recently, however, a composite DVM program introduced at national level may help profession in a better manner. Management, nutrition, environment, genetics, and disease are so interrelated that to address disease as if it was a discrete phenomenon, largely unrelated to other aspects of production and management, is unrealistic. Finding ways to best provide for the health needs of intensive livestock production enterprises is an important challenge facing the veterinary profession. The inconsequential policies have resulted in inappropriate handling of the both health and production issues of livestock sector.

Another issue is the job problems for the trained graduates, which has resulted due to a drastic increase in the number of graduates produced from various institutions. In the recent past, not only the number of institutions offering DVM/B.Sc. (AH) has increased but enrollment has also been enhanced which is not demand oriented. In contrast, the clientage has not expanded at the pace at which the veterinarians have been produced. In addition, various institutions are churning out Veterinary Assistants, who are not only competing with veterinarians for clientage, particularly in private sector but also adding towards quackery, which should not be encouraged by any means. At present, both private and public sector organizations employ veterinarians. The major employers of veterinarians in private sector are the pharmaceutical companies, feed mills, hatcheries, and poultry sale and services. The public sector includes various directorates in the Livestock and Dairy Development Department of all the four provinces of Pakistan.

Expectations for Veterinary Medicine in Future. Insight to the future of the profession can be gained by examining the social, technologic, economic, and political trends that affect the need and demand for veterinary services, and the potential impacts of these changes on veterinary medicine. There are many factors which will have to be kept in mind to meet the future expectations of veterinary medicine. Some of these factors are changing role of animals (developing economies, food security issues, WTO perspectives, etc.) focus on health (not disease),

expectations of high quality services, information explosion, advances in science and technology, information management, environmental deterioration, demographic changes, changes in animal agriculture, globalization, etc. Most of these major trends will enhance the importance of the veterinary profession and increase the demand for veterinary services. What actually happens, however, will depend upon how well the profession adjusts itself to the changing needs of society.

Most of the changes in the future will be a continuation of changes that are occurring today, for example:

- The world is growing more complex, and knowledge of science, animals, animal production, and animal health is expanding rapidly. Consequently, people expect more and more from the profession. The veterinary profession must become capable of routinely delivering higher and higher levels of services to all the classes of animals important to people and to achieve ever-higher levels of competence in all veterinary activities. It is not enough to provide services just to livestock and companion animals. All classes of animals are considered by the public to deserve high quality veterinary services.

- Veterinary medical practice will focus more and more on the care, health, welfare, utility, and productivity of animals rather than mainly on diseases and their control. This changing focus is happening more rapidly with food, laboratory, aquatic and wild animals than it is with companion animals.

- With increasing public concern about food safety, a growing understanding of the importance of companion animals to human health and well being, and continuing importance of animals and zoonoses to human health, practicing veterinarians, whether they recognize it or not, are becoming more actively involved in the human health delivery system.

- The profession will develop information banks and practical systems of organizing and using information so that practitioners, both public and private, will be able to more easily and routinely use the vast store of knowledge that exists on health, disease, drugs, and management.

- Major improvements will be made in the veterinary delivery system to improve services, increase the productivity of veterinarians, and to keep the costs of services affordable.

- Veterinary technology related to drugs, vaccines, diagnostic tests etc. will markedly advance thereby greatly increasing the effectiveness of veterinary interventions.

Future Directions for Veterinary Medicine

- Strengthen the undergraduate education so that all veterinarians have a strong general college education by the time they receive the DVM degree.

- Structure the professional curriculum to emphasize a core of instruction about the biomedical and veterinary sciences, and the principles of clinical veterinary medicine

in populations and individual animals in general, and an in-depth clinical experience in a practice theme either in the public or private sectors.

- Strengthen instruction relating to health and productivity/utility for all classes of animals.

- Devise programs to adequately educate veterinarians within the DVM program for public sector roles that are growing in complexity.

- Focus professional education process on the ability to find and use information rather than on the accumulation and instant recall of facts.

- Move veterinary education toward a North American strategy in which colleges focus their programs to enhance their quality and effectiveness, and cooperate with other veterinary medical colleges to ensure that all of society's needs are covered.

Future Strategy. For revitalization purposes, an independent commission for developing a national livestock policy should be established. This commission should comprise of the members with a sound technical background and willing to work in the best national interest. The nomination of members should be in a non-traditional and non-bureaucratic manner based on the professional competency not on the criteria like seniority, political influence, etc. etc. The first task of the proposed commission should be a strategic analysis of veterinary medicine and veterinary education from a national perspective. The analysis should be structured to provide an integrated and coherent perspective of the profession, its strengths, weaknesses, its modern role in society, the threats and opportunities facing it, and insight into the nature of the forces that will shape veterinary medicine in the years ahead. Some guidelines for consideration by the proposed commission are given below:

1. Veterinary medical education has to be considered as a vital force in higher education adjusting to numerous social, economic, technologic, and political changes that are occurring in its environment. Some far-reaching institutional changes will be required to meet the challenges of the future.

2. All over the world the veterinary services to the farmers/clients are changing from old paradigm of curative episodic and symptomatic care of sick animals to a new paradigm of holistic health care for promoting preventive prophylactic and nutritional and other measures on flock/herd/population basis. Training in veterinary institutions, therefore, must embrace these global trends by placing more emphasis on preventive rather than curative medicine.

3. Training of graduates may also be upgraded/revised keeping in view WTO agreement challenge

4. The challenge of equivalence of veterinary graduates produced by various institutions

5. Updating the skills of veterinarian by a well coordinated program of continuing education.

6. The world of private practice is vastly different and continues to change. The students and practitioners must be prepared for entry into this environment to meet the needs of society.

7. Revolutionary changes (not the evolutionary) in the curriculum are required.

8. The quality and effectiveness of research, education and extension programmes, more than any other aspect of the development process, will determine how well developing countries will feed and support their growing populations in the uncertain years ahead. Rural-sector development requires the constant improvement of human resources at all levels of production, processing, marketing and support services, as well as the development or adaptation of new knowledge about these processes through research. Therefore, national strategies for development require that educational programmes (primary, secondary and tertiary) be constantly evaluated and adjustments made as development progresses. Development also requires that new knowledge be created or adapted to support all aspects of agricultural development. Lasting progress in the improvement of animal production and health in any country cannot be realized without the underpinnings provided by research on local problems that constrain development.

9. Doctoral training and university research are especially problematic because they are the most underfunded of all major university activities in developing countries. Paradoxically, these are being neglected at the very time that increasing numbers of trained scientists are needed to propel agricultural development in most developing countries. The fundamental reason for this neglect is that postgraduate education and university research are not perceived by policy-makers in most countries to be relevant to development needs. Consequently, veterinary faculties often do not function as part of the national agricultural research system and, therefore, constitute an underused, potentially important source of highly skilled research workers. Faculties of Veterinary Science in developing countries will have to orient their research and postgraduate efforts toward solving high-priority development problems in their countries if they expect to receive a just share of scarce national resources allocated to education and research.

10. There was a time when postgraduate education of veterinarians in developing countries could best be achieved by sending students abroad for their research training. Today, the number of students requiring education, the cost of sending them to developed countries for long periods of time, the number that do not return after completion of their

training and the growing irrelevance of many training programmes in developed countries to agricultural production problems of developing countries make the establishment of high-quality postgraduate education programmes in developing countries mandatory.

11. Most developing countries have established graduate programmes in subjects relevant to animal production and health in institutions within the country. Although, some of these are of high quality, too many suffer from an acute shortage of funding, lack of a critical mass of mentors, the absence of a dynamic research programme and the lack of an adequate research environment to sustain high-quality postgraduate programmes,

12. It would be an impossible task to strengthen postgraduate programmes in all countries to the point where they are able to produce modern, productive scientists capable of solving the complex and difficult agricultural production problems of the developing world. In regions such as SAARC and ECO, a much more workable approach would be to establish subregional postgraduate centres staffed and funded to provide postgraduate education for citizens of countries that share common problems in a discipline or related area. Other institutions within the area could focus on other postgraduate topics to serve the needs of the subregion. Several veterinary colleges working together could develop high-quality postgraduate programmes in a number of disciplines; it would not be possible for any one college to do this alone.

CONSULTED REFERENCES

- Ajmal, M., 1981. A brief review of veterinary education in Pakistan. *Pakistan Vet. J.*, 1: 1-4.
- Anonymous, 2003-04. *Economic Survey of Pakistan, 2003-04*. Economic Advisor's Wing. Ministry of Finance, Government of Pakistan, Islamabad
- Anonymous, 2003-04a. *Livestock Wing, Ministry of Food, Agriculture and Fisheries*. Government of Pakistan, Islamabad
- Goolsby, D.W., 1992. *The origins and development of veterinary medicine and the United States Army Veterinary Corps*. Dissertation Auburn University.
- Karasszon, D., 1998. *A Concise History of Veterinary Medicine*. Akademiai Kiado, Budapest.
- Swabe, J., 1999. *Animals, Disease and Human Society: Human-Animal Relations and the Rise of Veterinary Medicine*. Routledge, New York
- Walker, R.E., 1991. *Ars Veterinaria: The Veterinary art from Antiquity to the End of the XIXth Century: Historical Assay*. Schering-Plough Animal Health, New Jersey.

(Received 11 April 2004; Accepted 14 June 2004)