

Piglet mortality impacts economic loss:

care, management and control

Bhanita Devi¹, Harshit Verma², P K Bharti³ and Rishendra Verma⁴

Indian Veterinary Research Institute, Izatnagar (Uttar Pradesh) 243 122

The pig population in India is 10.29 million (19th Livestock Census, 2012). It is of concern that the total population of pigs in India has declined by 7.54% over the previous census and in this context pig mortality is considered as an important aspect. The young one of pig is known as 'piglet' and mortality in piglets may be one of the reason for decline of population of pigs. Mortality in pigs affects adversely the financial viability and profitability of pig farming. Mortality pattern in organized swine herd may serve as indicator for assessing the herd health status and management. The gestation period of sow varies from 109 to 120 days with an average of 114 days. The litter size is usually smallest in the first litter (4-6), rises to a maximum between the third and fifth litter (10-14) and then remains constant or declines slightly with older parities (6-8). Moreover, the litter size is dependent upon the breed and season of birth. The average litter size in desi/Indian pigs varies from 4 to 6 (except Ghoongroo, 12-14) whereas in exotic counterparts it ranges from 8 to 12 (average 10). Pre-weaning mortality may go up to for 80% in piglets. Litter size, birth weight and order, farrowing duration, sex, breed, herd size, housing, lack of awareness among the farmers and pig raisers regarding management practices, disease prevention and control measures. Retrospective data on mortality may help in forecasting the future occurrence of disease in a particular geographical area.

Key words: Economic loss, Impact, Piglet

PIG farming plays an integral role for improvement of socio-economic condition of pig farmers and a boost to pig industry. Six breed of pigs in India include Ghoongroo (West Bengal), Niang Megha (Meghalaya), Agonda Goan (Goa), Tenyi Vo (Nagaland), Nicobari (Andaman and Nicobar) and Doom (Asom).

Weaning of piglets

It is carried out at 6 to 8 weeks of age but early weaning (35 days) is beneficial as the sow comes in heat within 7 days of weaning and rebreeding the female inter farrowing interval can be reduced. Weaning may cause stress on piglets lead to marked changes in their gastro-intestinal physiology and their susceptibility to viral and bacterial infections.

Piglet mortality

Piglet mortality can be broadly divided into two phase (Table 1)

(i) Pre-weaning mortality of piglets (from birth to weaning i.e 6-8 weeks)

(ii) Post –weaning mortality of piglets (from 8 to 20 weeks of age).

According to a report, a total of 5,481 crossbred piglets of 50% Hampshire, 75% Hampshire and T&D, overall piglet mortality in last ten years was 12.04 % during birth to two months of age, the highest mortality 5.89% was noted in 0–14 days age group. The highest mortality caused by digestive disorders accounted (28.79%) followed by respiratory disorders (23.79%).

DISEASES

It is reported that piglet mortality

is higher in organic pig production than in conventional production because drugs are not administered for treatment.

Behavioural problems

Small, weak, chilled and starving piglets during the first 1-2 days after farrowing and huddling of piglets under the bellies of their mothers for seeking warmth are always at risk of being crushed. The increasing litter size at birth lowers average birth weight which increases the risk of higher pre-weaning mortality rate. Piglet anaemia is associated with young rapidly growing piglets deprived of Iron (Fe) in their diet or from their environment. Haemoglobin (Hb) concentration may drop to 6 to 7g (normal level= 12-13g/100 ml) by 10 to 14 days of age.

Table 1. Data on piglet mortality

Breeds Traits/characters	Crossbred 75%			Crossbred 50%			Desi			Landrace		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Pre-weaning mortality rate (%)	21.95	11.20	16.73	5.82	13.63	10.86	8.33	13.63	10.86	17.30	8.82	13.95
Post-weaning mortality rate (%)	5.12	-	5.12	7.14	-	7.14	4.54	10.52	7.31	14.63	10.34	12.85

Nutritional deficiencies

There may be decreased colostrum intake due to neonatal factors such as weakness, prematurity, peripartum asphyxia, competition between siblings or due to maternal factors such as agalactia, mastitis or maternal rejection.

Hypoglycemia

When blood sugar decreases to below normal level (66-116 mg/dl) called as hypoglycemia. It occurs most common in piglets less than one-week-old which accounts for 15-35% of total piglet mortality and it occurs if the sow has any disease that decreases or inhibits milk production or letdown.

Savaging

Savaging refers to when dam attacks her new-born offspring. The temperament of the mother is very important to control mortality from savaging of piglets. A sow that is over aggressive to her piglets which in injury and death of the litter.

Parity order of dam/sow

The progeny born to gilts (first parity sows) are lighter at birth and weaning than progeny from older parity sows. Post-weaning gilt progeny are more susceptible to disease than sow progeny, with higher rates of medication and mortality. Maternal transfer of antibodies is more efficient in sows than gilts. The immune responsiveness of the progeny themselves was no different between piglets born/reared on gilts or sows. Due to increased rate of antibody decay in piglets reared on gilts contribute to increased susceptibility to disease in piglets.

Infectious diseases

(a) Bacterial

(i) **Colibacillosis:** Colibacillosis is

caused by enterotoxigenic (toxin producing) *Escherichia coli* (ETEC) strains. Fimbriae including K88 (F4), K99 (F5), 987P (F6), F18, and F41 are commonly found and porcine *E. coli* strains expressing these fimbriae are clinically important for porcine diarrhoea. The most frequently encountered serogroups were O76, O60, O120, O87, O107 and O80, O84 and O64, and O117 and O158. The other serogroups identified were O3, O5, O24, O25, O36, O42, O100, O116, O132, and O140, 3 rough and 56 strains were untypable.

(ii) ***Clostridium perfringens*, Type A Enteritis:** The disease usually affects piglets during the first week of life, but nursing pigs up to a month of age can sometimes be affected.

(iii) ***Salmonellosis:*** It is caused by *Salmonella typhimurium*, and *Salmonella enteritidis*.

(b) Viral

Virus causes Rotaviral diarrhoea, Porcine Reproductive and Respiratory Syndrome, Transmissible Gastroenteritis by coronavirus, Foot- and Mouth-disease, and Classical swine fever.

(c) Protozoal

Protozoa animates causes *Balantidium coli*, *Isospora suis*, *Eimeria suis* cause several diseases.

(d) **Gastrointestinal (GI) parasites**
The GI parasites causes *Ascaris suum*, *Strongyle* spp., *Strongyloides* spp., *Trichuris* several diseases.

Symptoms

(a) Post-weaned diarrhoeic piglets with symptoms of ill-thriftiness, pasty to liquid yellow to brown faces and loss of appetite.

(b) Loss of body weight.

(c) In acute cases the pigs will appear thin and show poor growth,

piglets huddle together shivering or lie in a corner in acute scour

(d) Sunken eyes and a thick leathery skin.

(e) Piglets may be found on their sides paddling and frothing at the mouth.

Diagnosis

(a) Diagnosis is based on the clinical examinations,

(b) Laboratory examination of the scour.

(c) Cultural examinations of fecal sample

(d) Antibiotic sensitivity tests

(e) The response to treatment

MANAGEMENT

Strategies to reduce mortality of piglets

The proper care and husbandry practices to reduce pre-weaning (42 days), post-weaning (42 days to 5 months) and adults (5 to 8 months) mortality rate to keep below 10%, 5% and 2% respectively have been recommended.

Pregnant animals

Pregnant animals should be housed in separate enclosures and should not be mixed with new animals to avoid fighting which may induce abortion. Pregnant sow should be dewormed with a suitable anthelmintic drug two weeks prior to farrowing. Good management in the farrowing house is the key to successful rearing of healthy pigs and to reduce piglet mortality. Farrowing stalls should be introduced to reduce piglet crushing.

Piglets at farrowing

The piglets should be removed as they are farrowed and kept warm in the creep space until farrowing is completed. Each piglet should be cleaned of all mucus to ensure that the breathing passages are clear.

Table 2. Vaccination schedule for pigs

Disease	Vaccine	Dose and route	Primary vaccination	Booster	Repeat
Swine fever	Lapinized	1 ml I/M	2 months and above	6 months after 1st dose	Annually
FMD	Polyvalent oil adjuvant	piglets-1 ml S/C, Adult-3 ml S/C	2 months and above	6 months after 1st dose	2 times in a year
Haemorrhagic septicaemia	Oil adjuvant	1 ml I/M	2 months and above	6 months after 1st dose	2 times in a year

Preventing piglets from crushing or traumatic injury

Guard rail should be used in farrowing pens to minimize crushing of piglets. Separate areas for both the sow and piglets are necessary.

Reducing accidental killing of the piglets by the sow

If the piglets are in danger of being killed by their mother they should be put in a box or covered in creep area and kept warm by putting a clean cloth or litter in the box to make the piglets comfortable.

Naval bleeding

A few minutes after the birth, the umbilical cord may be pulled gently away or cut about 5 cm away from the body. The navel of each piglet should be soaked in a cup of iodine solution to prevent inflammation and tetanus. Each piglet should be rubbed and dried carefully with a clean cloth.

Piglet anaemia

Iron-dextran injection should be given @ 150-200 mg deep intramuscular at 2-3 days and 14th days of birth to prevent piglet anaemia. Iron also can be mixed in the feed or in the drinking water (50 g of ferrous sulphate (Fe₂ SO₄) in 1 litre of hot water).

Piglets during suckling period

The piglets should be fed at regular intervals, 5 times a day for the first two days, then 4 times a day on 3rd day and after that 3 times a day on 4th day. After 14 days, quantity of milk at each feed increases but the number of feeds per day should be

decreased.

Orphan piglets

Orphan (parentless) piglets can be compensated with milk replacer consisting of one egg yolk thoroughly mixed with one litre of cow milk which supplies a well balanced diet. Oral ferrous sulphate may be added to one litre of milk. Cross fostering may also be done to save the life of piglets.

Small and weak piglets

Weak piglets may be at disadvantage in receiving good passive immunity through colostrum. They should be assisted to suckle after birth while milk is constantly available on the sow. If milk is not available, previously collected colostrum or tinned evaporated milk can be given to teat as small weak piglets.

Creep feeding

Fresh creep feed is provided at one week of age in a place where pig can get away from the sow. Creep ration is highly nutritious, palatable and given at the age of 7 to 14 days. It contains 20-22% DCP, 22-24% CP and 75-80% TDN.

Piglet diarrhoea

Orally administered drugs are usually more effective than injections. Dry, warm, draft-free environment is of primary importance in treating scours.

Farrowing

The farrowing should be planned in such a way that all causative and

predisposing factors like season, feed availability and incidence of disease should be taken into account.

Vaccination

Dam immune status is important and periodic monitoring of level of antibodies may help to maintaining herd immunity. Classical Swine fever vaccine is given before rainy season in India. Breeding pigs should be tested for *brucellosis* and *leptospirosis*.

Treatment

In case of necessity for the administration of antibiotics, it should be given to full one litter piglets where the problem lies. Milk is a source to feed those piglets who are deprived of sucking mothers' milk. Care should be given to use pasteurized milk. Use of probiotic to prevent pre-weaning diarrhoea and increase the average daily weight gain.

SUMMARY

Piglet mortality is of great economic concern to the farmers and pig producers. The mortality of piglets during pre-weaning phase accounts for more than 3/4th of the total piglet losses. Several factors like behavioral, non-infectious and infectious play role towards pig mortality. Usually, it is considered that 8-10% natural mortality may not cause a concern but when the mortality increases at a rapid rate, it may lead to huge economic loss as well as it would affect over all pig population in India. The proper and judicious management practices along with bio-security measures at pig farm may certainly be the prominent solution to curve the pig mortality.

¹Senior Research Fellow, Emeritus Scientist Project, Mycobacteria Laboratory, Indian Veterinary Research Institute, Izatnagar 243 122, ²Assistant Professor, College of Veterinary and Animal Science, Meerut, ³Scientist (SS), Livestock Production Management Section, ⁴Emeritus-Scientist, Mycobacteria Laboratory, Indian Veterinary Research Institute, Izatnagar 243 122.

It pays to advertise in Indian Farming