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Constraints Perceived by Small-Scale Pig Farmers During the COVID-19 Lockdown in Tamil Nadu

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Abstract

The COVID-19 pandemic created severe disruptions in livestock production systems, particularly affecting small-scale pig farmers in India. This study investigates constraints perceived by pig farmers in Tamil Nadu during the lockdown and documents the coping strategies adopted. A sample of 50 small-scale pig farmers was surveyed using a pretested interview schedule between January and March 2021. The Problem Confrontation Index (PCI) was used to rank the severity of constraints. Major constraints included swill feed shortages, pork price decline, movement restrictions, labour scarcity and difficulty in selling animals. Farmers adapted by altering feeding schedules, using homemade concentrate mixtures, increasing scavenging and adopting self-treatment due to limited veterinary access. Findings highlight the need for strategic support during emergencies to strengthen pig production systems.

Keywords: Constraints, COVID-19, PCI, Pig farmers, Small-scale, Tamil Nadu

Introduction

In developing countries, foods of animal origin are particularly important in alleviating malnutrition among children, pregnant women and economically disadvantaged groups. In addition to their nutritional value, livestock enterprises support livelihood security by creating income and employment opportunities for smallholder farmers. Among these enterprises, pig farming is especially significant due to its efficient feed conversion, rapid growth and capacity to utilize agricultural and household waste, thereby promoting sustainable food systems and rural economic development. Traditionally viewed as a small-scale pig farmers and lower economic classes in India facing limited awareness of scientific method of rearing with high feed costs, lack of improved breeding stock, inadequate veterinary services and poor marketing (Narendra Kumar *et al.*, 2025) [8]. At present the pig rearing in part of country is gaining acceptance across society due to technological advancements and increasing meat demand (Nanda *et al.*, 2020) [7].

COVID-19 pandemic caused severe lockdown restrictions in India, causing major disruptions in the agricultural and livestock industries. Pig farming, predominantly practiced by small and marginal farmers, faced severe challenges due to dependency on swill feed, local market dynamics and daily veterinary assistance (Anand Kumar *et al.*, 2017) [1]. Lockdown restrictions limited transportation, closed eateries (major source of swill feed), restricted public mobility and reduced access to markets. This unprecedented situation endangered the livelihood of pig farmers, making it essential to examine the constraints faced and the strategies adopted for survival. The present study assesses the constraints experienced by small-scale pig farmers during the lockdown in Tamil Nadu. By addressing these constraints and building resilience within the pig production sector, farmers can better withstand future challenges and improve their livelihoods. Additionally, collaboration between government agencies, non-governmental organizations and private sector stakeholders is essential to ensure a holistic approach to addressing the needs of pig farmers and promoting sustainable development in the sector. However, systematic studies on husbandry practices and marketing in this sector are lacking, prompting this study to identify current management practices and challenges in pig farming during the crisis period.

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Materials and Methods

The study was conducted in small-scale pig farmers across Tamil Nadu between January and March 2021. A total of 50 pig farmers were randomly selected from eight districts of Tamil Nadu for the study. For data collection an ex post-facto research design was used. A pretested interview schedule was utilized to get the information about the socio-economic status of the farmers and major constraints perceived by the farmers were collected. The management practices followed by the pig farmers during pandemic were then categorized into three major categories viz. feeding, disease management and marketing constraints. The Problem Confrontation Index (PCI) was employed as the primary statistical tool to quantify and rank the severity of constraints experienced by pig farmers (Islam *et al.*, 2010) [4]. A four-point rating scale was used for computing the problem score of a respondent. Respondents rated each constraint under four levels: High (3 points), Moderate (2 points), Low (1 point) and No constraint (0 points). PCI was calculated using the following formula.

$$\text{PCI} = (3 \times \text{High}) + (2 \times \text{Moderate}) + (1 \times \text{Low})$$

Constraints were ranked based on descending PCI values. Additionally, descriptive statistics such as frequency and percentage analyses were utilized to summarize feeding practices, disease management and marketing adaptations. As the study followed an ex post-facto design with perceptual data, inferential statistics were not applied.

Results and Discussion

The present study was conducted in eight districts of Tamil Nadu during the year 2021 in 50 small-scale pig farmers. The selection of farmers was based on number of animals reared by the farmers and their experience during COVID pandemic was recorded through pretested interview schedule. This provided insightful information about the socio-economic status of the pig farmers and constraints perceived by them during crisis. The socio-economic profile of the pig farmers are presented in Table 1. It reveals the majority of the respondents are male (96%) followed by middle aged (60%) farmers and highly educated (96%) most of them are nuclear family (56%). Balasubramanyam *et al.* 2020 [2] has observed 67% of the piggery farmers lived in nuclear type family in Tamil Nadu. 62% of the farmers have more than 10 years' experience in pig farming and 84% of them rearing for fattening followed by breeding.

Table 2 presents the PCI based ranking of constraints perceived by pig farmers during pandemic period. The data shown that larger scale farmers shown that the shortage and complexity in procuring swill feed was ranked first with the highest PCI score (129) followed by decline in pork price (124), Restriction of inter-state movement (123), Insufficient labour availability (120) and unsold pork and difficulty in convincing consumers (119) and more. Nanda *et al.* 2020 was revealed that lack of knowledge of feeding balanced ration was the most important constraints with a mean score of 88.55. Saikia *et al.*, 2019 [10] reported second ranked constraints was non availability of balanced commercial pig feeds (Garrett's mean score of 67.50).

Feeding Management Practices Followed by the Pig Farmers

During the COVID-19 lockdown, small-scale pig farmers adopted several feeding management adjustments to cope with feed scarcity, restricted mobility and increased feed

costs. Table 3 revealed the management practices followed by the pig farmers during pandemic. All the respondents (100%) reported stopping food waste utilization, likely due to closure of hotels and eateries, while an equal proportion (100%) increased the use of rice gruel as an alternative feed source. A large majority of farmers increased scavenging duration (86%) and feeding frequency (96%) to compensate for reduced availability of conventional feeds. About 80% of the farmers (n = 40) prepared home-made concentrates and modified concentrate mixtures, indicating adaptive strategies to reduce dependence on commercially available feeds. Furthermore, 88% of the respondents reduced the purchase of concentrate feed, reflecting financial constraints during the lockdown period. The high price of concentrates was the major constraint (60.96%) was also reported by Chakrabarti *et al.* 2020 [3]. The use of vegetable and fruit waste was reported by 66% of farmers, while 76% stocked agricultural residues as emergency feed resources. Similar result was observed by Jothika *et al.* 2022 [5] and reported that thirty per cent farmers feed their breeding stocks with locally available feed which includes grains, cereals, meat, fish meal etc., and there was no separate feed for piglets, weaner and for adults. However, only 20% of the farmers used stored dry feed, suggesting limited feed storage capacity and lack of preservation facilities. Overall, the findings highlight that the COVID-19 lockdown significantly influenced feeding practices, compelling farmers to rely on low-cost, locally available feed resources to sustain pig production.

Disease Management Practices Followed by the Pig Farmers

The disease management practices adopted by pig farmers revealed a heavy reliance on informal and self-guided sources of treatment. A majority of the respondents sought information from medical shops (92%), indicating easy accessibility and immediate availability of medicines without professional consultation. Similarly, self-treatment was practiced by 90% of the farmers, reflecting limited access to formal veterinary services and possible cost constraints.

A substantial proportion of farmers (82%) contacted progressive pig farmers for treatment advice, highlighting the importance of peer networks and experiential knowledge in disease management. Only 34% of respondents consulted veterinary doctors through mobile communication, suggesting underutilization of professional veterinary expertise. The use of social media group messages for treatment advice was reported by 24% of farmers, indicating emerging but still limited digital engagement. The lack of knowledge in vaccination schedule (67.91%) and non-availability of adequate veterinary services (55.08%) was observed in Jharkhand pig farmers (Chakrabarti *et al.*, 2020) [3] and 68.5% of West Godavari pig farmers indicated lack of veterinary services. This reflects gaps in access to institutional veterinary services and limited awareness of scientifically recommended health management practices.

Notably, none of the respondents followed ethno-veterinary treatment practices, suggesting a decline or lack of awareness of traditional animal healthcare methods in the study area.

Marketing Practices Adopted by Pig Farmers

Regarding marketing practices, the majority of pig farmers (62%) sold their pigs directly to consumers, which helps eliminate middlemen and may result in better price realization. However, only a small fraction (4%) engaged in the preparation of value-added pork products such as pork

chilli, pork gravy, and lard, indicating minimal diversification and limited value addition at the farm level. Notably, 94.45% of pig farmers in Kerala reported a lack of marketing channels and good quality breeding stock; with swill feed unavailability particularly impacting the SZPA Zone.

About 24% of farmers reported changing their selling

location, possibly as a strategy to cope with market fluctuations, demand variability, or mobility restrictions. Overall, the findings suggest that pig farmers predominantly depend on traditional marketing channels, with limited adoption of value addition and alternative marketing strategies.

Table 1: Socio-economic Profile of the pig farmers

| Sl. No | Particulars | Frequency | Percentage |
|-------------------------------|----------------------------|-----------|------------|
| Gender | | | |
| 1 | Male | 48 | 96 |
| 2 | Female | 2 | 4 |
| Age | | | |
| 1 | Below 35 years (Young age) | 10 | 20 |
| 2 | 35- 50 years (Middle age) | 30 | 60 |
| 3 | Above 50 years (Old age) | 10 | 20 |
| Education | | | |
| 1 | Illiterate | 2 | 4 |
| 2 | Literate | 48 | 96 |
| Type of family | | | |
| 1 | Nuclear | 28 | 56 |
| 2 | Joint family | 22 | 44 |
| Pig Farming experience | | | |
| 1 | < 5 years | 14 | 28 |
| 2 | 5- 10 years | 5 | 10 |
| 3 | >10 years | 31 | 62 |
| Occupation | | | |
| 1 | Primary occupation | 13 | 26 |
| 2 | Secondary occupation | 37 | 74 |
| Purpose of rearing | | | |
| 1 | Fattening | 42 | 84 |
| 2 | Breeding | 6 | 12 |
| 3 | Combined | 2 | 4 |

Table 2: The Problem Confrontation Index based ranking of constraints perceived by pig farmers during pandemic period (N=50)

| S. No | Constraint | PCI Score | Rank |
|-------|--|-----------|------|
| 1 | Shortage and complexity in procuring swill feed | 129 | I |
| 2 | Decline in pork price | 124 | II |
| 3 | Restriction of inter-state movement | 123 | III |
| 4 | Insufficient labour availability | 120 | IV |
| 5 | Unsold pork and difficulty in convincing consumers | 119 | V |
| 6 | Increase in concentrate feed cost | 116 | VI |
| 7 | Difficulty in transport | 113 | VII |
| 8 | Fear of disease spread through meat consumption and handling | 111 | VIII |
| 9 | Market uncertainty | 110 | IX |
| 10 | Lack of veterinary treatment facility | 92 | X |

Table 3: Management practices followed by the pig farmers during pandemic

| S. No | Feeding Management Practices | Frequency | Percentage |
|-------|--|-----------|------------|
| 1 | Increased scavenging duration | 43 | 86% |
| 2 | Stopped food waste utilization | 50 | 100% |
| 3 | Increased feeding frequency | 48 | 96% |
| 4 | Prepared home-made concentrate | 40 | 80% |
| 5 | Modified concentrate mixture | 40 | 80% |
| 6 | Increased rice gruel usage | 50 | 100% |
| 7 | Reduced concentrate feed purchase | 44 | 88% |
| 8 | Used vegetable & fruit waste | 33 | 66% |
| 9 | Stocked agricultural residues | 38 | 76% |
| 10 | Used stored dry feed | 14 | 20% |
| S. No | Diseases Management Practices | Frequency | Percentage |
| 1 | Consulting veterinary doctors through mobile | 17 | 34% |
| 2 | Contacted progressive pig farmers for treatment | 41 | 82% |
| 3 | Sought information from medical shop | 46 | 92% |
| 4 | Followed Ethno Veterinary Treatment | 0 | 0% |
| 5 | Followed Self treatment | 45 | 90% |
| 6 | Utilized Social media group messages for treatment | 12 | 24% |
| S. No | Marketing practices adopted | Frequency | Percentage |

| | | | |
|---|--|----|-----|
| 1 | Directly sold to consumers | 31 | 62% |
| 2 | Preparation of valued added meat products like pork chilli, pork gravy, lard preparation | 2 | 4% |
| 3 | Changed location of selling | 12 | 24% |

Conclusion

The study highlights severe economic and management challenges faced by pig farmers during COVID-19 lockdown. The lockdown severely affected pig farmers by disrupting feed availability, veterinary access and market stability. Swill feed shortage emerged as the top constraint since restaurants the primary sources of waste feed were closed. Market uncertainty and pork price crashes further reduced income. Farmers adopted alternative feeding strategies such as home-made concentrate mixtures, green fodder and increased scavenging. Veterinary access was limited, leading to high self-treatment rates. Future strategies should include establishing feed banks, strengthening veterinary telemedicine, promoting local markets and supporting value-added pork products to improve farmer resilience.

In terms of marketing, most farmers preferred direct sale to consumers, whereas adoption of value addition and alternative marketing strategies remained low. The findings highlight the need for strengthening veterinary extension services, improving farmers' access to professional animal healthcare, and promoting value-added pork processing and organized marketing systems to enhance income, sustainability, and resilience of small-scale pig farmers.

Conflict of Interest: Not available

Financial Support: Not available

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