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Dairy Animal Welfare during Transportation in Punjab: A KAP Study

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ABSTRACT

A KAP (Knowledge, Attitude and Perception) study on dairy farmers of Punjab was conducted to have the idea of their knowledge on animal welfare practice during transportation. A total of 200 dairy farmers across the state were randomly selected for the said study. Dairy farmers were asked to answer the 27 questions comprising of open ended question and multiple choice questions, fill in the blanks. The animal welfare indicators like physical injury, bruising, fracture, bleeding, broken tail, behavior of animal, feeding, drinking, vocalization, urination and defecation during loading and unloading of dairy animal was observed. Beside these, method of loading/unloading the animal, vehicle design, attitude of handler, stocking density, type of bedding, side railing and accompanying person was observed. The study revealed majority of dairy farmers (72%) have low knowledge level of animal welfare issue during transport. The same percentage (71%) of farmers has poor to average adherence to animal welfare practice during transport. It was concluded that the animal welfare issues are compromised during transportation of animals in Punjab by dairy farmers. Extensive and consistent campaign is recommended for apprising the dairy farmers about animal welfare issues.

Keywords: Animal welfare, dairy animals, farmers, knowledge level

Among the various management issues, it is the transportation of the animals when the animal welfare issues are compromised the most. Dairy farm animals are most often transported for sale and purchase in the livestock market, changes in ownership, for breeding purposes and for exhibition in shows or contests. Animal welfare generally includes five basic freedoms: (i) freedom from thirst, hunger and malnutrition, (ii) freedom from discomfort, (iii) freedom from pain, injury and disease, (iv) freedom to express normal patterns of behavior (v) freedom from fear and distress. Nielsen *et al.,* (2010) identified four aspects of animal transport, which have great impact on welfare as the transport duration increases. Those are: (i) the physiological and clinical state of the animal before transport; and during transport (ii) feeding and watering; (iii) rest and (iv) thermal environment. Whereas the conditions associated with transport itself, including unfamiliar surroundings, novelty, noise, vibration, social regrouping, environmental changes, loading and unloading, temperature extremes, exposure to new pathogens, prolonged transit times, and feed and water deprivation, loading and unloading are particularly stressful (Trunkfield *et al*., (1990); Swanson *et al*., 2001; Fike, 2006). The rough handling or poorly designed transport conditions determine both animal welfare and meat quality (Grandin, 1978). The important points to be considered is the species of animal transported, age of the animal, means of transport, transport conditions and duration of the journey as well as other factors influencing the welfare of animal. Poor welfare especially during handling and transport may be indicated by changes in the behavior of the animal (Warris, 2000) like reduced activity and responsiveness and reduced immune function and most likely result in lowered productivity (Price, 2008).

Furthermore, animals that are considered to be especially hard to handle possess a great risk for handlers, which increases the cost of animals and makes them harder to sell (Grandin, 1993). Keeping in view the animal welfare indicators, the present study was thus planned to evaluate the knowledge-perception level of dairy farmer on the animal welfare practices during transport of dairy animal.

MATERIALS AND METHODS

This consensus study was conducted on dairy farmers (n=200) in the State of Punjab (India) when they transported their animal to livestock market, animal shows or animal treatment campsorganized all over Punjab. The data was collected by distributing pretested structured questionnaire, by interviewing and observing animal as well as vehicle used for transportation of animal. The knowledge-perception score was generated by assigning 1 and 0 score for correct and incorrect answer, respectively. The observation score for the study was calculated by assigning 1 and 0 score to correct and incorrect observation made at the time of loading and unloading of animal respectively on various animal welfare indicators. Data was entered in excel sheet and descriptive analysis was done using statistical package for the social sciences (SPSS) version 20.

RESULTS AND DISCUSSION

Majority of farmers were of middle aged (65%), educated upto secondary (56%) and were having small to medium herd size (73%) as shown in Table 1.

Table 1: Socio-personal Characteristics of dairy farmers

Sl. No.	Category	Number	Frequency
1	***Age (years)***		
	Less than 35 (young)	35	17.5%
	35-55 (middle)	130	65%
	55 and above (old)	35	17.5%
2	***Education***		
	Upto middle school	68	34%
	Middle to secondary	112	56%
	Graduate and above	20	10%
3	***Dairy Farmer's category (Herd Size)***		
	Small (<5 animals)	69	34.5%
	Medium (5-10 animals)	77	38.5%
	Large (>5 animals)	54	27%

Dairy farmer's knowledge and attitude towards cattle transportation and animal welfare

The study on knowledge of dairy farmers towards cattle transport and animal welfare revealed that majority of respondents 71.5% do not have any knowledge about animal welfare rules and act. For transportation of animals 22% farmers preferred to use Tata Ace, 46 % Mahindra Pickup, 27% trolley, 2% jeep, 1.5% by walk, and 1.5% preferred truck . The dairy farmers reported that they do not need to transport animal in day to day routine, but need arises when to took the animal to veterinary hospital (17.5%), for animal show (3%), animal market 89 (44.5%), and other reasons (35%) like gifting animal to daughter/ relative. The farmers were enquired about the factors to be considered before transpiration of animal. According to 11% of dairy farmers ventilation was considered as priority, 11.5% opted feeding, 49% bedding and 36% said nothing is required for precaution except vehicle. Stocking density of animals as per respondents knowledge varies from 1 to >6 for trolley, 1 to >3 animals in Mahindra pick up and 1 to >3 animal for canter and 3 to >5 adult animals in truck (Table 4). Majority of farmers (86%) preferred open vehicle for animal transportation. The heat stress in animals can be significantly reduced if shade is provided (Spain *et al.,* 1995; Valtorta *et al.*,1997). The loading and unloading of the animal is one of the strenuous process and 85% dairy farmers told that they use planks for loading and unloading of animal. Regarding bedding material in vehicle 26% dairy farmers preferred to use straw, 7.5 % soil, 0.5% jute sack, 28 % grass and 38% told that no bedding was required.

During journey 97.5% of the respondents reported that animal should be tied with rope in vehicle by neck (86.5%) and from muzzle (61.5%). All the respondents told that animal should be face in the direction of movement of vehicle.

The act of watering should be performed during the long journey while transporting dairy animal said 24% farmers, 17% preferred watering in <6 hrs and 0.5% in 6 to 12 hours

of journey. Only 19% farmers told that milking should be done in dairy animal in long distance journey. All most all (99%) respondents revealed the use of stick for the loading and unloading of animal on the vehicle. Majority (81%) dairy farmers revealed that calves should be transported along with dam in same vehicle. Only 19% respondents said careful driving is required while transporting pregnant animal and 56.5% said no special effort is required 24.5% preferred to transport these animals separately.

It was found that during transportation in winter that 119 (59.5%) dairy farmers were concerned about covering the vehicle and 8(4%) about bedding in vehicle. Majority dairy farmers (57%) did not hire labour for assistance during transportation and 43% told they seek labor assistance and animal was familiar with them. In support to this DePassillé *et al*., (1996) conducted a study on dairy calves' discrimination of people based on previous handling and reported that cattle do form social relationships of a sort with humans. Cattle apparently learn to recognize individual humans and modify their responses to them based on the pleasantness or averseness of previous encounters with a particular individual.

Information source for animal welfare issues

Regarding information source on animal welfare issues, 47% farmers specified TV as source of information, 18% marked internet, 16.5 % quoted relatives/ fellow farmers, 13% newspaper, 3% magazine and 2% quoted books as their source of information. (Table 2). It was reported that majority of 91.5% dairy farmers do not participate with their animal in championship whereas only 8.5% of dairy farmers participate in District level championship.

Table 2: Information source for dairy farmer about animal welfare issues during transport of dairy animal

Sl. No.	Parameters	Frequency	Percentage (%)
1	Have you ever read any article on animal welfare/book/ T.V. Show		
	❖ T.V	94	47%
	❖ Internet	36	18%
	❖ Newspaper	26	13%
	❖ Magazine	6	3%
	❖ Book	4	2%
	❖ Some other source	34	16.5%
2.	Do you participate with your animal in following championship?		
	District level championship	17	8.5%
	Animal championship, Muktsar	0	0%
	No	183	91.5%

Table 3: Knowledge and perception of dairy farmer about animal welfare issues during transport of dairy animal

Sl. No.	Parameters	Frequency	Percentage (%)
1	Do you know animal welfare rules and act?		
	❖ Yes	57	28.5%
	❖ No	143	71.5%
2	Which vehicle you prefer for the transportation of dairy animal?		
	❖ Tata ace	44	22%
	❖ Mahindra pickup	92	46%
	❖ Trolley	54	27%
	❖ Truck	3	1.5%
	❖ Jeep	4	2%
	❖ By walk	3	1.5%
3	When do you feel need to transport animal?		
	❖ Veterinary Hospital	35	17.5%
	❖ Show	6	3%
	❖ Market	89	44.5%
	❖ Other	70	35%
4	What precautions should be followed while transportation of dairy animals?		
	❖ Ventilation	22	11%
	❖ feeding	23	11.5%
	❖ bedding	98	49%
	❖ nothing	57	28.5%
5	Which vehicle you prefer for the transportation of dairy animal from same village to same destination by farmers.		
	❖ Canter	38	19%
	❖ Mahindra pickup	85	42.5%
	❖ Trolley	42	21%
	❖ Truck	10	5%
	❖ by walk	2	1%
	Not interested to share vehicle	23	11.5%
6	What is the stocking density of animals in vehicle?		
	❖ Trolley		
	❖ 1 to 3	16	8%
	❖ 3 to 6	68	34%
	❖ > 6	3	1.5%

Sl. No.	Parameters	Frequency	Percentage (%)
	Mahindra pick up		
	❖ 1	10	5%
	❖ 2	78	39%
	❖ 3	28	14%
	❖ < 3	7	3.5%
	Canter		
	❖ 1	15	7.5%
	❖ 2	85	42.5%
	❖ 3	59	29.5%
	❖ > 3	7	3.5%
	Truck		
	❖ 3 to 5	30	15%
	❖ > 5	9	4.5%

Nielsen *et al.* (2010) identified four aspects of animal transport, which have great impact on welfare as the transport duration increases. Those are: (i) the physiological and clinical state of the animal before transport and during transport (ii) feeding and watering; (iii) rest and (iv) thermal environment. They revealed that it is not journey duration but these associated negative aspects that compromise welfare. Mackenzie *et al.* (1997) and further in 2001, Swanson and Morrow-Tesch reported that the known transport related stressors can be eliminated by pre-transport management factors.

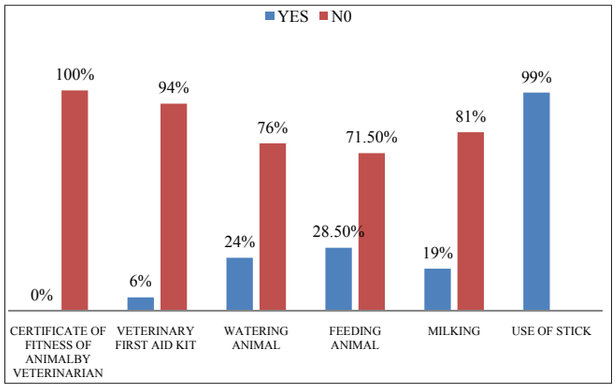

Fig. 1: Distribution showing perception and practice of animal welfare by dairy farmer

The loading and unloading of the animal is one of the strenuous processes and it was found that 85% of dairy farmers use planks for loading and unloading of animal. The conditions associated with transport itself, including unfamiliar surroundings, novelty, noise, vibration, social regrouping, environmental changes, loading and unloading, temperature extremes, exposure to new pathogens, prolonged transit times, and feed and water deprivation. Loading and unloading are particularly stressful (Trunkfield *et al.* (1990); Swanson *et al.* (2001); Fike and Spire, (2006).

Table 4: Knowledge about transport of dairy animal by road

Sl. No	Parameters	Frequency	Percentage (%)
1	The vehicle during transportation of animal in long distance journey should be covered or open?		
	❖ Covered	28	14%
	❖ Open	172	86%
2	Do you practice using planks for loading and unloading of animal to the vehicle for transportation?		
	❖ Yes	170	85%
	❖ No	30	15%
3	What is used for bedding in vehicle		
	❖ Straw	52	26%
	❖ Sand	15	7.5%
	❖ Soil	1	0.5%
	❖ Sack	56	28%
	❖ Nothing	76	38%
4	Do you tie animal with rope during journey in vehicle?		
	❖ Yes	195	97.5%
	❖ No	5	2.5%
5	How do you tie, animal with rope?		
	❖ By Neck	173/200	86.5%
	❖ By Muzzle	123/200	61.5%
	❖ By Limbs	0	
	❖ Don't tie	0	
6	Have you ever transported animals of different species in same vehicle?		
	❖ Yes	6	3%
	❖ No	194	97%
7	Do you practice watering animal during journey		
	❖ Yes	48	24%
	❖ No	152	76%
8	Have you ever carry certificate of fitness of animal by veterinary doctor?		
	❖ Yes	0	
	❖ No	200	100%

Sl. No	Parameters	Frequency	Percentage (%)
9	Animal face towards which direction during transportation?		
	❖ In direction of movement of vehicle	200	100%
	❖ In opposite to direction of movement of vehicle	0	
	❖ In any direction	0	
	❖ Don't know	0	
10	Do you perform milking in dairy animal in long distance journey ?		
	❖ Yes	38	19%
	❖ No	162	81%
11	Do you prefer to use stick for loading and unloading of animal?		
	❖ Yes	198	99%
	❖ No	2	1%
12	Do you transport calves along with dam in same vehicle?		
	❖ Yes	162	81%
	❖ No	38	19%
13	How do you transport violent & pregnant animal		
	❖ same as other	113	56.5%
	❖ carefully	38	19%
	❖ separate	49	24.5%
14	Do you feed animal during long journey hours during transportation?		
	❖ Yes	57	28.5%
	❖ No	143	71.5%
15	What precautions are followed during transportation of animal in winter		
	❖ Covered/	119	59.5%
	❖ bedding /	8	4%
	❖ same as other	73	36.5%
17	Have you ever walked animal for long distance journey		
	❖ Yes	81	40.5%
	❖ No	119	59.5%
18	Do you hire worker/labor for assistance during transportation?		
	❖ Yes	86	43%
	❖ No	114	57%
19	Does animal recognize that worker?		
	❖ Yes	43	21.5%
	❖ No	157	78.5%

The knowledge Perception score reveals that 72% of farmers have low score, followed by 18% having medium and only 10% high score.

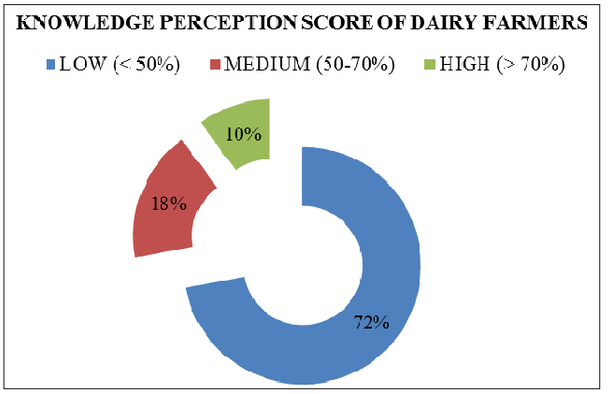

Fig. 2: Distribution showing knowledge perception score of dairy farmers

Observation of Animal welfare Indicators

The present observational study has been conducted on randomly selected 200 dairy farmers of Punjab for animal welfare issues during transportation at the time of loading and unloading in animal trade fair/ markets in Punjab.

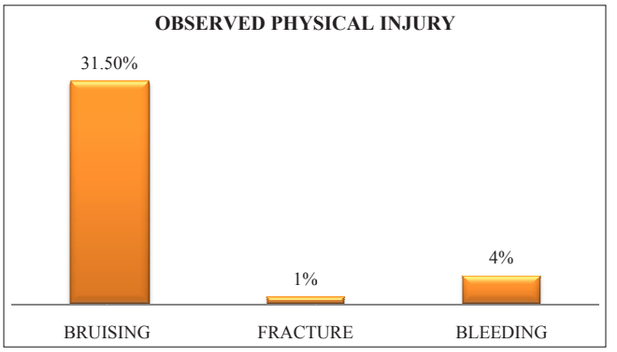

Fig. 3: Distribution showing observed physical injury in dairy animals during transportation

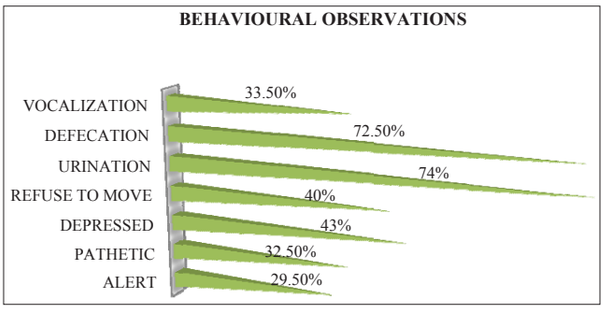

Fig. 4: Distribution of behavioural observation of dairy animal after unloading

Majority of 188 (94%) do not carry veterinary first aid kit in vehicle during journey. It was reported that no farmer carry certificate of fitness of animal by veterinary doctor before transportation of dairy animal. It was observed that 36 (18%) of animals had physical injury, bruising was observed in 31.5%, fracture was observed in 1%, bleeding in 4%. Under behavioural study, it was observed that 29.5% animals were alert, 32.5% apathetic, 43% depressed, 40% refused to move. Out of 200 dairy farmers, 24% were found to practiced feeding drinking during journey halt. It was found that 13% respondents took halt in long journeys for animals rest. The vocalization was observed in 33.5% of animals, this might be due to pain or discomfort or under frightened condition.

The urination (74%) and defecation (72.5%) were observed in animals in vehicle before unloading. Gebresenbet *et al.*, 2010 reported that during transport of animals by vehicle, the floor material of the vehicle must be non-slippery, cleanable, disinfect able, sufficiently drained or free from urine, water to reduce injury and number of falling of animals. Broom (2003) discussed the key factors affecting the welfare of animals during handling and transport viz. attitudes to animals and the need for training of staff; methods of payment of staff; laws and retailers' codes; genetics, especially selection for high productivity; rearing conditions and experience; the mixing of animals from different social groups; handling procedures; driving methods; stocking density; increased susceptibility to disease and increased spread of disease.

Method of loading/ unloading and animal welfare practice

The vehicle design for the animal transport was observed and measurement of vehicle was done. 42% farmers used Mahindra pick with dimensions 8.3'L X 5.3'W, Tata ace by 23% with dimension 8.1'L X 5.8'W , trolley by 24% with dimensions 12'LX6'WX2'H, truck by 3.5% with dimension 32'LX8W'X8H'), by walk (2%) and by other means (5.5%) like tying with tractor/bull cart. The behavior of animal handler was observed, it was found that 158 (79%) out of 200 respondents were calm and 42(21%) were aggressive during handling the animal while loading and unloading them from vehicle. In majority (50.5%) of vehicles the stocking density observed was two, 17% was having one animal per vehicle, three in 12%, four in 9.5%, five in 2.5% , six in 4% and more than six in 4% vehicles. Whereas according to Transport of Animals (Amendment) Rules, 2008. The Space allowance per cattle according to transport of Animals (Amendment) Rules, 2008 is 1-2 square meter for cattle weighing from 200 to 400 kg.

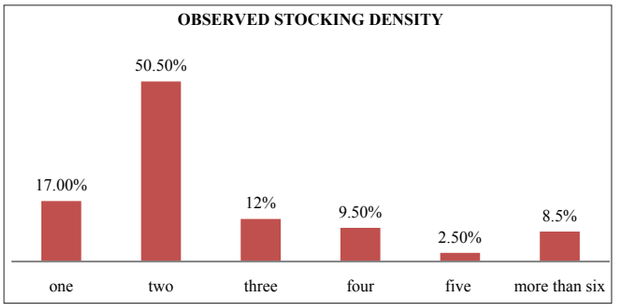

Fig. 5: Distribution of observed stocking density of dairy animal

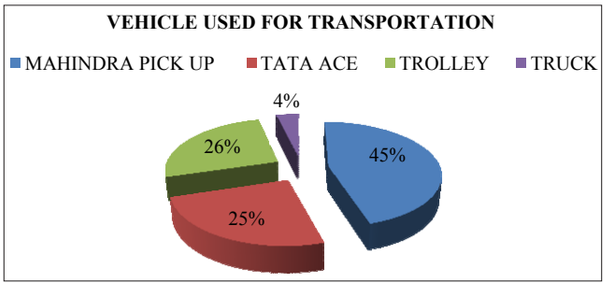

Fig. 6: Distribution of vehicle observed to used for dairy animal transport

It was observed that majority (66%) dairy farmers performed loading and unloading of animal on soil heap, 25% on cemented floor and only 6% used planks. During transportation, all most all farmers (98%) tied their animal with rope, 90.5% tied animal from front side and 16.5% from side railing. The side railing in vehicle was also observed in 25.5% vehicle to prevent the animal from injury. The bedding material observed in vehicles was straw (36.5%), grass (13.5%), soil (13%), sack (1.5%), chopped fodder (6%) and while 30.5% farmers didn't used any bedding material. In 12% vehicles some extra material acquiring the space along with the animals was observed, i.e. tyre and only 32.5% farmers kept accompanying worker for assistance in handling animals. Gebresenbet *et al.,* (2005) revealed that the transport preceding conditions and processes such as preparation, planning, loading, management and unloading at the end of the transport chain needs improvement to enhance the welfare of animals and meat quality.

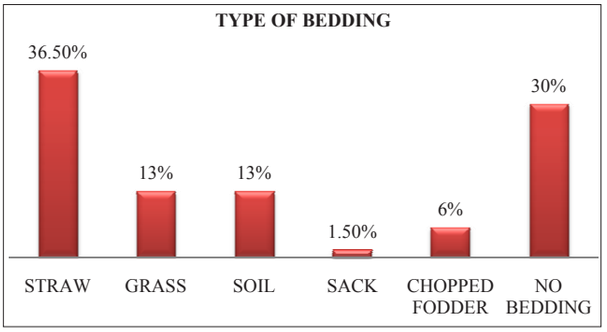

Fig. 7: Distribution on type of bedding observed during transport of dairy animal

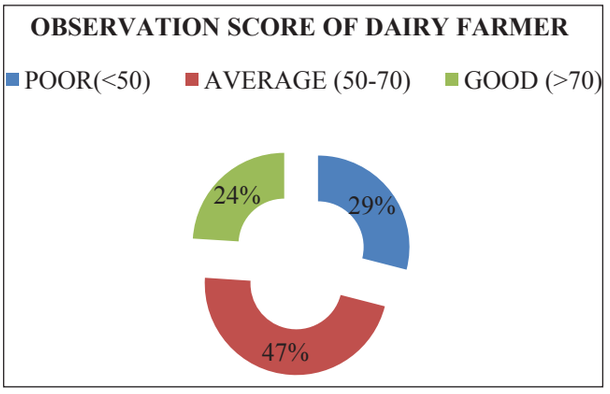

Fig. 8: Distribution of observation score of dairy farmer

Nearly half (47%) of the respondents had average observation score. It mean these farmers were not following the animal welfare related practices as discussed during transport, 24% of respondents have good and 29 % have average observation score.

Correlation between Knowledge Perception Score on animal welfare issues and Observation Score with independent variable

The correlation analysis of knowledge perception score of dairy farmers on animal welfare issues during transportation of dairy animal revealed that education have significant (0.05) and positive correlation with knowledge score, whereas only farm size have significant and positive correlation with observation score (Table 5).

Table 5: Correlation of knowledge perception score on animal welfare issues and observation score with independent variable

Independent variable	Knowledge perception score		Observation Score	
	Pearson correlation (r)	Signifi-cance	Pearson correlation (r)	Significance
Age	-0.120	0.09	-0.028	0.68
Education	0.238	0.001**	-0.030	0.67
Farm Size	0.064	0.369	0.153	0.03*

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

CONCLUSION

During observation study, physical injury was observed in 36.50% of animals, urination and defecation in 72.5%, reluctance to move 40%, depressed (43%), apathetic (32.5%), no bedding material in 30.5%, over stocking density in 50% vehicles, 67.5% of farmers were not having assistance for handling animal. Seventy two per cent of dairy farmers have low knowledge on animal welfare issues during transportation of cattle, followed by 18% as medium and only 10% high and according to the observation score 47% of farmers have average score, followed by 29% having poor and only 10% scoring good. So we can conclude that, animal welfare practice during transportation in Punjab is poor. For animal welfare, extensive campaign on animal welfare issues is recommended.

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