



Ergonomics Intervention on Veterinary Clinic Workplace Lay Out Increasing Comfort Work

Agnes Ayu Biomi^{1*}, Puput Pertiwi²

Bali International University

Corresponding Author: Agnes Ayu Biomi agnesayubiomi@iikmpbali.ac.id

ARTICLE INFO

Keywords: Ergonomics, Lay Out, Veterinarian, Comfort

Received : 3 January

Revised : 18 January

Accepted: 20 February

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ABSTRACT

The daily activities of veterinarian when dealing with patients are very complex especially since the patient is an animal. Starting from patient data through owner, patient health history, anamnesis, checking clinical symptoms, doing laboratory examination, giving diagnosis and treatment. Veterinary work is mostly done in the clinic and is quite exhausting when patients come in large numbers. Workplace comfort is indispensable for reducing fatigue, unnatural work attitude and uncomfortable movements for veterinarians, assistants or clinic visitors. Convenience in a veterinary clinic especially the physical facilities used by veterinarians and assistants is one of the veterinary supporters and assistants work well. The study used the same design subjects consisting of pretest and posttest method with a sample size of 21 people. Between the two stages of the study there was washing out period for 1 day. The veterinary clinic's facilities are set to within range according to the anthropometry, covering spacing and reducing repetitive or excessive motion and given a convenience questionnaire before and after the improvement. After an ergonomic intervention in the veterinary clinic's workplace layout there is a change in comfort level better than before. Ergonomic workplace can provide comfort for veterinarians, assistants and clinic visitors. Fatigue, unnatural work attitude and uncomfortable movements can be reduced

INTRODUCTION

Humans sometimes like to complain of pain, stiffness and pain after work. For example, back pain, waist pain, hands feel stiff, neck stiff and so forth. The appearance of these complaints can be caused by awkward position while doing the job. If ignored, the complaints can lead to errors in the work or human error and cause accidents at work. One of the problem is a non-ergonomic condition, such as a wrong sitting position, a job with a static work attitude or a non-systematic workspace.

Everyday the veterinarian's job is to handle the patient both during illness and in good health. Starting from patient data through owner, patient health history, anamnesa, checking clinical symptoms, doing laboratory examination, giving diagnosis and treatment. Veterinary work is mostly done in the clinic and it is quite tiring when the patients come in large numbers because the veterinarian often performs repetitive movements with a standing attitude then complaints and fatigue arise especially when the clinic work order is irregular. Workplace comfort is indispensable for reducing fatigue, unnatural work attitude and uncomfortable movements for veterinarians, assistants or clinic visitors. Convenience in a veterinary clinic especially the physical facilities used by veterinarians and assistants is one of the veterinary supporters and assistants work well.

Clinic is a health service facility conducted by health personnel to provide medical health services[1]. Clinics may be owned by business entities or individuals. Clinics may specialize in one particular area based on disciplines, age groups or certain diseases such as specialist clinic, dentist or veterinarian. Veterinary clinic is a clinic led by a veterinarian who provides health care facilities to animals. Veterinary clinic should install a clinic board and have a practice license. Veterinary clinics should have adequate medical and non medical equipment and meet quality, safety and safety standards.

The risky vet work should be supported with a comfortable work environment. An ergonomic work environment including workspace arrangement is vital in improving veterinary productivity as well as the comfort of veterinarians and clinic visitors. The veterinary clinic's venue should be laid out ergonomically, in order to reduce the level of risk of accidents that can occur and increase comfort in work. Given that patient discomfort also depends on the clinical condition. Therefore, in this research, ergonomic intervention needs to be done in by changing the layout of veterinary clinic so that patients, visitors and veterinarian can minimize the incidence of work accident and increase comfort not only for veterinarians but also for clinic visitors.

LITERATURE REVIEW

Clinics are health service facilities run by health workers to provide medical health services (Regional Minister of Health Regulation No. 9, 2014). Clinics can be owned by business entities or individuals. Clinics can specialize in services in one particular area based on scientific discipline, age group or certain diseases, such as specialist clinics, dentists or veterinarians. A vet clinic is a clinic led by a veterinarian that provides health care facilities to animals. Veterinary clinics must put up a clinic board and have a practice permit (SIP). Veterinary clinics must have adequate medical and non-medical clinical equipment and meet quality, security and safety standards.

Veterinary clinics provide professional veterinary consultation and care services. Veterinary medical services provided at veterinary clinics vary, including periodic examinations and vaccinations. Childbirth, sterilization, and treatment. The medical equipment used is animal scales, examination tables, operating tables, microscopes, medicine cabinets, surgical equipment and supplies. The clinic building is located on the side of the road with a building area that is not very large and consists of 2 floors. The 1st floor is used for the waiting room, administration room, examination room and operating room. Meanwhile, the 2nd floor is used as an inpatient area.

A veterinarian is a doctor who treats animals and their diseases. In contrast to doctors in general and dentists who mostly work as practitioners, some veterinarians choose to work in other fields apart from opening clinical practices. Veterinary practitioners usually deal specifically with one particular group of animals, such as small animals or large animals. Small animal groups such as pets, dogs, cats, hamsters and rabbits. Meanwhile, large animals that are usually used as livestock include chickens, cows, horses, pigs and others.

Veterinarians not only pay attention to animal health but also pay attention to animal welfare and public health. The veterinary profession has quite high risks. One of them is that veterinarians treat animals that cannot communicate, unlike doctors who treat humans. Animals cannot complain about their illness, but they can do things to show their discomfort with their illness, such as not wanting to eat, feeling weak and vomiting. Animal behavior is unpredictable, and animals are uncomfortable when examined, so sometimes animals like to bite as a form of self-protection. Animals also feel afraid, worried and upset when they are taken to the vet so that the actions taken by the animal to the doctor can also be dangerous. An animal's personality and behavior depend on the treatment it receives from the animal owner and people who communicate with the animal (N.S. Budiana, 2008). Knowledge of animal behavior and how to control the equipment used can minimize accidents that might occur in the practice area. The rate of transmission of animal diseases to humans is quite high, such as rabies, bird flu or leptospirosis. Bites and scratches are the most common accidents. The risky work of veterinarians must be

supported by a comfortable work environment so that accidents for veterinarians while working can also be minimized.

METHODOLOGY

The type of research used in this study is experimental research, using the same design subjects with washing out method to eliminate the effect of previous treatment. The sample size is calculated based on the Slovin formula[2]. Location of research at one veterinary clinic in Denpasar. Pre comparative analysis with pre with different test in the form of paired t test at 5% significance. Level, if the data is normally distributed. Analysis of the effect before and after improvement by using paired t test.

RESULTS

Data was collected by giving questionnaires before and after the intervention. Questions in the questionnaire consist of several sections covering: size of furniture, light, tidiness, noise, circulation of work, clinic furniture, color and temperature. Veterinary clinic workplace lay out made ideal for the veterinarian, assistant, paramedic and clinic visitor for the comfortable dan effective in work. Figure below shows several item that need to be fixed.

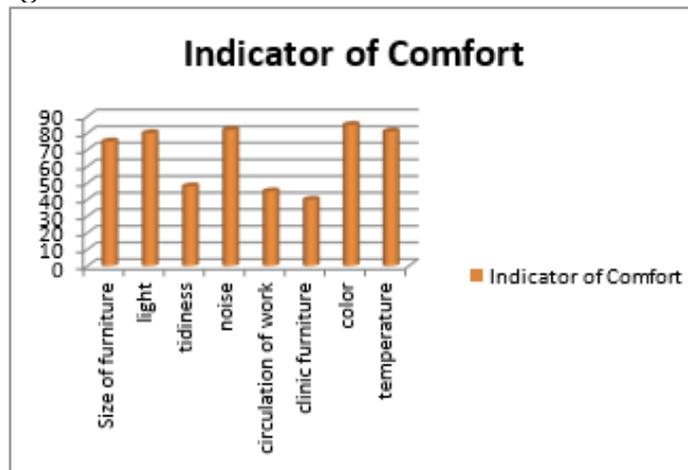


Figure 1. Indicator of Comfort

The results of the questionnaire show that it takes some improvement especially in tidiness, circulation of work, clinic's tool and lay out because these indicators cause discomfort at work.

The size of the furniture is in conformity with its anthropometry this can be shown in the results of the questionnaire were mostly feel comfortable on the size of the existing furniture. Anthropometric measurements that were measured were as follows where the majority of workers worked in a standing state, especially when surgical on animals for approximately 2 - 3 hours. The surgical table is adjustable.

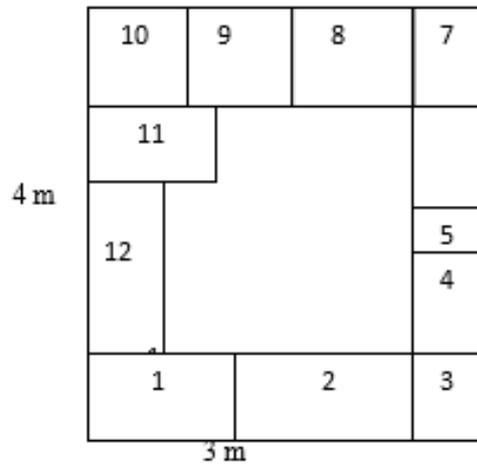


Figure 2. Lay Out Clinic Before Intervention

Caption :

1. The entrance
2. Check Desk
3. Drug Rack
4. Display bandage, vitamins, etc.
5. Stairs up
6. Cage
7. Machine tool sterilization
8. Bookshelves and shelves of surgical instruments, plaster, cotton, etc.
9. Washbasin
10. Shelves for dog and cat food
11. Surgical table
12. The desk where client files are

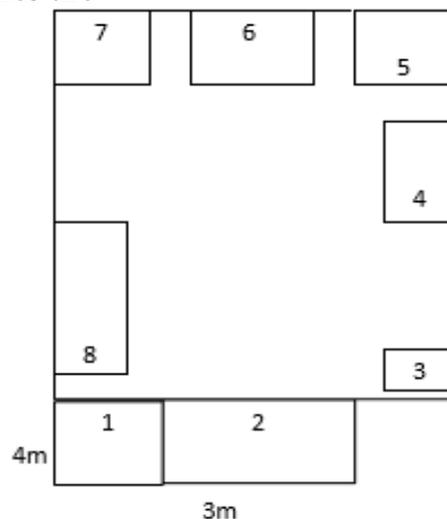


Figure 3. Lay Out Clinic After Intervention

Caption :

1. The entrance
2. Check Desk
3. Stairs up
4. Surgical table
5. Machine tool sterilization
6. Bookshelves and shelves of surgical instruments, plaster, cotton, bandage, vitamin
7. Wash basin
8. The desk where client files are

Table 4. Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
1	Pretest	3.2133	21	.16844	.03676
	Posttest	3.5905	21	.11587	.02528

Table 5. Table -Test Paired Two Sample for Means

	<i>Pre</i>	<i>Post</i>
Mean	3.21333333	3.59047619
Variance	0.02837333	0.01342476
Observations	21	21
Pearson Correlation	0.41673511	
Hypothesized Mean Difference	0	
Df	20	
t Stat	-10.816281	
P(T<=t) one-tail	4.1617E-10	
t Critical one-tail	1.72471822	
P(T<=t) two-tail	8.3234E-10	
t Critical two-tail	2.08596344	

DISCUSSION

From these results, it shows that the arrangement of clinic space has not been well organized. From the results of the percentage of respondents' answers that the work space has not been utilized evenly. Table placement and other facilities have not been properly structured so that it looks narrow.

Convenience or comfort work is calculated by filling the convenience questionnaire before and after the intervention based on four Likert scales, the results indicate that there is a significant effect before and after the intervention. Increased comfort is felt by the visitors of the clinic, veterinarian, assistant and paramedic from the difference of pre and post average of 0.38.

The veterinarian's work will be smooth if it is supported by human resources as a qualified veterinarian. Some criteria that must be considered in veterinary work are health and fitness of the body, organization and work system and a natural work attitude and a good work environment. If there are several factors that are less supportive, there will be an unnatural work attitude and an uncomfortable work environment[6]. Therefore in this study, it is expected that veterinarians can work in a comfortable work environment.

Veterinarians can work well when supported by appropriate environments such as structuring workspaces in the order of veterinarian work which includes temperature, lighting, distance, room size, layout. Comfortable work space and efficient veterinary space will make the veterinarian's performance more optimal and minimize work fatigue.

Through the results of the questionnaire, then what needs to be improved ergonomically is the change of work order in accordance with the order of veterinary work, to reduce complaints of repetitive or excessive motion. The order of the vet works are:

- a. Receiving the patient
- b. Asking data of the patient
- c. Asking patient about medical history and complaints
- d. Checked
- e. Anamnesa
- f. Treatment
- g. Giving therapy
- h. Perform surgery is required

Arrangement of work space in the clinic can affect the physical and non-physical environment. The workspace function does not only place equipment and equipment in a room, but can regulate and facilitate the workflow of veterinarians, veterinary assistants and paramedics. Every component of work such as work, work processes, equipment, room conditions, physical environment, technology use and veterinarians is an inseparable unit.

With the use of good workplace lay out, then the workflow process will be effective and efficient. The condition of the clinic's workplace layout with the limited availability of room space, some non-functional furniture that makes the

workers less comfortable is reduced. The ergonomic work environment has a profound effect on worker performance[3]. Workplace arrangements, the preparation of furniture and supporting equipment in the clinic should consider effective, efficient, convenient and safe movements and movements adapted to the body's ability, work activities and work environment to achieve optimal performance.

From the picture of the lay out before and after the intervention, it can be seen that there are some changes in layout, furniture size and reduction in some of the less functioning furniture, namely: dog and cat food shelves which are then arranged with the installation of small shelves on the wall, drug shelves those are transferred to other rooms and medicines are displayed along with dog and cat food. The rest is placed in storage cabinet number 8 in the picture that has been labeled to separate drugs, vitamins and equipment and surgical equipment. In designing the workspace, many things must be considered. The workspace has 4 basic principles that are useful for the organization as a guideline in structuring workspaces, namely[4]:

- a. The shortest distance principle, good workspace is the completion of work with the shortest distance possible.
- b. The principle of using each room, a good workspace is to utilize every space so that there is no unused space.
- c. The principle of changing the composition of the workplace, a good workspace is a room that is easily changed or rearranged at a minimal cost.
- d. The principle of the work circuit, a good workspace is to place workers and equipment in the order of the work in question.

The steps in arranging the workspace are[5]:

- a. Determine the relationship of work units between workers, types or fields of work done in the workspace.
- b. Know and study every job, sequence and amount of work done.
- c. Make a drawing or plan that lists the length and width of the work room.
- d. Develop work equipment and furniture.
- e. Arrange a layout plan.

CONCLUSIONS AND RECOMMENDATIONS

Implementation of ergonomics at veterinary clinics as an understanding of the relationship between work and comfort becomes an inseparable whole. The need for ergonomic intervention in ergonomic work environment conditions can prevent work accidents, reduce complaints and prevent injuries and increase comfort in work[7]. There is a significant influence between the clinical workspace and the convenience of veterinarians, veterinary assistants, paramedics and clinic visitors. The hope for the future of this research can be further developed in more than one veterinary clinic so as to create comfortable working conditions especially in good clinical lay out workspaces and encourage professional attitudes and actions for veterinarians in completing their work.

FURTHER STUDY

Further research can be carried out at other health clinics, but not everyone will want to follow this layout change due to cost constraints, room size and the tastes of each clinic owner, so further research can be used as a recommendation.

ACKNOWLEDGMENT

We would like to thank Prof. dr. I Dewa Putu Sutjana, PFK., Sp.Erg. for his guidance and motivation to us to make this research. We would also like to thank the Rector of Bali International University, the Head of Occupational Health and Safety Studies Program which has given us the opportunity to conduct this research so that this research can be completed on time. Lastly, we would like to thank the Veterinary Clinic, the staff and the clinic visitor who helped contribute to this research.

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