

# Effect of Teaching Practical Anatomy to Increase the Knowledge and Skills of Veterinary Students in Bangladesh-A Sheep Model

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**Abstract** – Present study was taken to evaluate the effect of practical anatomy to increase the knowledge and skills of the veterinary students in Bangladesh. Development of knowledge and skills of students was two steps procedure. In the first steps the students were taught the female reproductive tract of a sheep without practical exposure of the organs. After finishing the lecture all the students took part in an identification interview. Researcher gave a tally mark for every correct and incorrect answer for each organ. About 56.79% students were given correct answer and about 43.21% students were given incorrect answer before practical exposure of the organs. During the pre-exposure interview the percentage of correct answer of different organs such as ovary, oviduct, uterine horn, body of the uterus, cervix, vagina and vulva were 90.24%, 23.17%, 86.59%, 48.78%, 51.22%, 69.51% and 28.05%, respectively. The percentage of incorrect answer of the above mention organs were 9.76%, 76.73%, 13.41%, 51.22%, 48.78%, 30.49% and 71.95%, respectively. In the second steps the students were taught the reproductive tract of sheep with practical observation of the organs and they were given few minutes for group discussion. It was revealed that there is significant difference between the pre-observation and post observation answer given by the students. About 98.26% students were given correct answer and only 1.74% students were given incorrect answer at second time interview. During the post exposure interview the percentage of correct answer of different organs such as ovary, oviduct, uterine horn, body of the uterus, cervix, vagina and vulva were 100%, 95.12%, 100%, 100%, 100%, 100% and 92.68%, respectively. The percentage of incorrect answer of the above mention organs were almost 0% except oviduct and vulva which were 4.88% and 7.32%, respectively. It was concluded that students of the faculty of veterinary and animal sciences learned with enjoy due to the practical exposure and increase their knowledge and skills.

**Keywords** – Teaching, Practical Anatomy, Knowledge and Skills, Veterinary Students.

## I. INTRODUCTION

Every person learns in different way and learning styles can vary from man to man. Different people have different types of visual, verbal, aural, physical and logical learning styles. But most of the students and learners can be benefited by practical learning.

Formal theoretical learning is essential for expert knowledge (Katajavouri et al. 2006). Although Katajavouri et al. (2006) believed that informal practical knowledge (or skills development) is learnt in the workplace, others see the importance of integrating it into the curriculum as part of the final year programme (Kiggundu & Nayimuli 2009; Irons, Holm & Annandale 2017; Walley & Albadri 2015). Irons et al. (2017) emphasise that this is important in producing a Day One Competent veterinarian, and all the competencies expected in the curriculum are included as they are considered Day One Competencies thereby allowing a new graduate to

practice effectively on the first day. There are, however, those who doubt the value of practical experience (Hodson 1990; Osbourne 1993; Woolnough & Allsop 1985), and it is true that the type of practical experience, and not just any practical experience for the sake of inclusion in a curriculum, is important (Pienaar 2014). Katajavouri et al. (2006) further stated that metacognitive skills are acquired through practical experience and are important for lifelong learning. Lifelong learning is an integral part of the veterinary profession. It has been confirmed that practical knowledge is contextual, and it is important for students to understand the link between theory and practice to apply theoretical knowledge in the workplace (Katajavouri et al. 2006).

Walley and Albadri (2015) reported that in a survey, final year dental students in the United Kingdom with more practical experience felt more capable of discussing inhalation sedation with patients and parents and were more satisfied with the quality of teaching. Increased student satisfaction with training was interpreted by Walley and Albadri (2015) as owing to more practical training being included in the curriculum. Students in the pre-clinical years at the Faculty of Veterinary Science of the University of Pretoria experience limited and basic practical training.

## II. MATERIALS AND METHODS

The aim of the Present study was taken to evaluate the effect of practical anatomy to increase the knowledge and skills of the veterinary students in Bangladesh. The study was conducted from July, 2020 to June, 2021. Reproductive tracts of sheep were collected freshly from different slaughter houses of Rajshahi City Corporation (RCC). Name of the market and number of sample collected from each market were mentioned below in table 01.

Table 1. Name of the market and number of sample collected from each market of RCC.

| S. No | Name of Market    | Number of Sample Collected |
|-------|-------------------|----------------------------|
| 01    | Shaheb Bazar      | 36                         |
| 02    | Shalbagan         | 15                         |
| 03    | Binodpur          | 17                         |
| 04    | Narikel Baria, RU | 18                         |
|       | <b>Total</b>      | <b>86</b>                  |

Total 82 students of different batches of faculty of veterinary and animal sciences, Gono Bishwabidyalay were took part in the experiment. Batch wise distribution of students were mentioned below in table 02.

Table 2. Batch, semester and number of students took part in the experiment.

| S.I. | Batch           | Semester        | Number of Students Took Part |
|------|-----------------|-----------------|------------------------------|
| 01   | 5 <sup>th</sup> | 1 <sup>st</sup> | 34                           |
| 02   | 4 <sup>th</sup> | 2 <sup>nd</sup> | 24                           |
| 03   | 3 <sup>rd</sup> | 3 <sup>rd</sup> | 24                           |
|      | <b>Total</b>    |                 | <b>82</b>                    |

Development of knowledge and skills of students was two steps procedure. In the first steps the students were taught the reproductive tract of sheep without practical exposure of the organs. The organs were right and left

ovary, right and left oviduct, right and left uterine horn, body of the uterus, cervix, vagina and vulva. After finishing the lecture all the students take part in an identification interview (Figure 03). Researcher gives a tally mark for every correct and incorrect answer for each organ. After completing the interview of all batches total correct and incorrect tally mark counted and recorded for percentage calculation. In the second steps the students were taught the reproductive tract of sheep with practical observation (Figure 04) of the organs and they were given few minutes for group discussion (Figure 05). Then the student were again interviewed (Figure 06) following same procedure mentioned above and recorded the data. Final result was calculated by using excel sheet.



Fig. 1. Researcher visiting the slaughter house for collecting sample of cow at shaheb bazar, Rajshahi.



Fig. 2. Researcher visiting the slaughter house for collecting sample of cow at Katakhalı bazar, Rajshahi.



Fig. 3. Pre-exposure interview of students show very poor performance.



Fig. 4. Students were engaged for practical exposure of the organs with the researcher.



Fig. 5. Group discussion of students with practical exposure of the organs.



Fig. 6. Post-exposure interview of students show very good performance.

*Statistical Analysis*

The tally marks for the correct and incorrect answers of different parts of genital tract of sheep was recorded using computer package program. Simple ANOVA was performed to observe the significant differences among the mean values. Data were presented to determine the average value of correct and incorrect answers. Final result was calculated by using excel sheet. All statistical analysis was done in the Department of Veterinary and Animal Sciences, University of Rajshahi.

**III. RESULTS AND DISCUSSIONS**

Development of knowledge and skills of the students was evaluated in Table 03 and table 04. Total 82 students of different batches of faculty of veterinary and animal sciences, Gono Bishwabidyalay were took part in the experiment. In the first steps the students were taught the reproductive tract of sheep without practical observation of the organs and interviewed. About 56.79% students were given correct answer and about 43.21% students were given incorrect answer before practical observation of the organs (Figure 07). During the pre-exposure interview the percentage of correct answer of different organs such as ovary, oviduct, uterine horn, body of the uterus, cervix, vagina and vulva were 90.24%, 23.17%, 86.59%, 48.78%, 51.22%, 69.51% and 28.05%, respectively. The percentage of incorrect answer of the above mention organs were 9.76%, 76.73%, 13.41%, 51.22%, 48.78%, 30.49% and 71.95%, respectively (Table 03). This result supports the Katajavouri et al. (2006) who stated that metacognitive skills are acquired through practical experience and are important for lifelong learning. Lifelong learning is an integral part of the veterinary profession. It has been confirmed that practical knowledge is contextual, and it is important for students to understand the link between theory and practice to apply theoretical knowledge in the workplace.

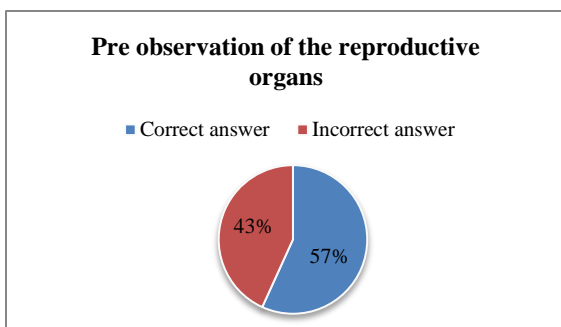


Fig. 7. Overall result of pre observation of the reproductive organs.

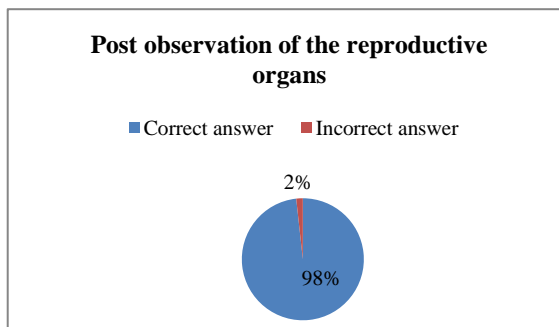


Fig. 8. Overall result of post observation of the reproductive organs.

Table 3. Organ wise results of pre observation of the reproductive tract.

| Name of Reproductive Organs | Number of Students | Pre-Observation |       |                  |       |
|-----------------------------|--------------------|-----------------|-------|------------------|-------|
|                             |                    | Correct Answer  |       | Incorrect Answer |       |
|                             |                    | No              | %     | No               | %     |
| Ovary                       | 82                 | 74              | 90.24 | 08               | 9.76  |
| Oviduct                     | 82                 | 19              | 23.17 | 63               | 76.83 |
| Horn of Uterus              | 82                 | 71              | 86.59 | 11               | 13.41 |
| Body of uterus              | 82                 | 40              | 48.78 | 42               | 51.22 |

| Name of Reproductive Organs | Number of Students | Pre-Observation |              |                  |              |
|-----------------------------|--------------------|-----------------|--------------|------------------|--------------|
|                             |                    | Correct Answer  |              | Incorrect Answer |              |
| Cervix                      | 82                 | 42              | 51.22        | 40               | 48.78        |
| Vagina                      | 82                 | 57              | 69.51        | 25               | 30.49        |
| Vulva                       | 82                 | 23              | 28.05        | 59               | 71.95        |
| <b>Average</b>              | <b>82</b>          | <b>46.57</b>    | <b>56.79</b> | <b>35.42</b>     | <b>43.21</b> |

Table 4. Organ wise results of post observation of the reproductive tract.

| Name of Reproductive Organs | Number of Students | Post Observation |              |                  |             |
|-----------------------------|--------------------|------------------|--------------|------------------|-------------|
|                             |                    | Correct Answer   |              | Incorrect Answer |             |
|                             |                    | No               | %            | No               | %           |
| Ovary                       | 82                 | 82               | 100          | 00               | 00          |
| Oviduct                     | 82                 | 78               | 95.12        | 04               | 4.88        |
| Horn of Uterus              | 82                 | 82               | 100          | 00               | 00          |
| Body of uterus              | 82                 | 82               | 100          | 00               | 00          |
| Cervix                      | 82                 | 82               | 100          | 00               | 00          |
| Vagina                      | 82                 | 82               | 100          | 00               | 00          |
| Vulva                       | 82                 | 76               | 92.68        | 06               | 7.32        |
| <b>Average</b>              | <b>82</b>          | <b>80.57</b>     | <b>98.26</b> | <b>1.43</b>      | <b>1.74</b> |

Then the students were taught the reproductive tract of sheep with practical observation of the organ and again interviewed. It was revealed that there is significant difference between the pre-observation and post observation answer given by the students. About 98.26% students were given correct answer and 1.74% students were given incorrect answer at second time interview (Figure 08). During the post exposure interview the percentage of correct answer of different organs such as ovary, oviduct, uterine horn, body of the uterus, cervix, vagina and vulva were 100%, 95.12%, 100%, 100%, 100%, 100% and 92.68%, respectively. The percentage of incorrect answer of the above mention organs were almost 00% except oviduct and vulva which were 4.88% and 7.32%, respectively (Table 04). This result is more or less similar with Walley and Albadri (2015) who reported in a survey of final year dental students in the United Kingdom with more practical experience felt more capable of discussing inhalation sedation with patients and parents and were more satisfied with the quality of teaching. Increased student satisfaction with training was interpreted by Walley and Albadri (2015) as owing to more practical training being included in the curriculum. Students in the pre-clinical years at the Faculty of Veterinary Science of the University of Pretoria experience limited and basic practical training.

#### IV. CONCLUSION

It was concluded that practical teaching and learning is a strong method for every students and learners which can permanently increase the knowledge and skills. During the post exposure interview the percentage of correct answer of different organs such as ovary, oviduct, uterine horn, body of the uterus, cervix, vagina and vulva were 100%, 95.12%, 100%, 100%, 100%, 100% and 92.68%, respectively. The percentage of incorrect answer

of the above mention organs were almost 0% except oviduct and vulva which were 4.88% and 7.32%, respectively. The result will help to compare the normal and abnormal structure of reproductive organ in future. Veterinarians, teachers, researchers, students can use the data for future study such as anatomical and histopathological study of reproductive organ of Sheep. This teaching method will help the artificial insemination workers for proper artificial insemination. Students of the faculty of veterinary and animal sciences learned with enjoy due to the practical exposure of the reproductive organ and this project also enriches the laboratory of the Faculty of Veterinary and Animal Sciences.

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