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KNOWLEDGE, AWARENESS AND ATTITUDE TOWARDS ASPIRATION BIOPSY AMONG UNDERGRADUATE DENTAL STUDENTS

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Abstract

Introduction: Fine-needle aspiration biopsy (FNAB) is a technique where a thin or a fine needle is inserted into a mass cellular material which is later aspirated. Cytological diagnosis is done on the aspirated material. FNAC is a simple, quick, inexpensive, and minimally invasive technique to diagnose different types of head and neck swellings. **Aim:** The main aim of this research is to understand the knowledge and awareness of the participants on aspiration biopsy. **Materials and methods:** A survey was designed to analyse the result. The questionnaire was prepared in Google Forms (online survey link) and was distributed to 100 dental undergraduate students. The questionnaire was based on fine needle aspiration biopsy. The responses were then collected and statistically analysed using SPSS software version 21.0. Descriptive analysis as well as Chi Square test was used to analyse the data. **Results and discussion:** Most participants were aware about aspiration biopsy (86%). There was a

significant association between the year of study and the awareness on aspiration biopsy (P value=0.000). All groups of participants had knowledge about the contents of aspiration fluid and it showed no statistical significance (P Value=0.057) **Conclusion:** In the present study, the participants had adequate knowledge about aspiration biopsy which can be enhanced even more by various public surveys and spreading awareness.

Keywords: FNAB or FNAC; aspiration, awareness, fine needle, innovative technique.

Running Title: KAP on aspiration biopsy among undergraduates

INTRODUCTION

Fine-needle aspiration biopsy (FNAB) is a technique where a thin or a fine needle is inserted into a mass cellular material which is later aspirated. Cytological diagnosis is done on the aspirated material. Reactive and inflammatory processes are separated by not involving surgical intervention (1). In an article written by Scott.E.K et al, among skeletal osteosarcoma, paediatric small round cell bone, soft tissue sarcomas, synovial sarcoma, skeletal chondrosarcoma and adult myxoid soft tissue sarcomas. FNAB was found to be the most accurate type of method in diagnosing. But in cases such as bone sarcoma subtyping is more accurate. Histological subtyping of adult soft tissue sarcoma was found to be often impossible and was found to have no influence on initial therapy (2). Fine Needle Aspiration Cytology of the head and neck region is well known as a medical treatment. Head and neck regions of children are often benign in nature, with a small number of malignant lesions commonly present as a mass of the head and neck (3).

FNAB is a diagnostic test that can be used in benign and malignant breast lesions and thyroid sarcoma, etc. FNAB was found to be a very valuable method in diagnosing primary soft-tissue lesions. The limitations of FNAB include quite a low percentage of false negative results (4). Out of 730 patients undergoing FNAB, there 93% significant results, only 5 false negative results and no false negative results were given and found in the diagnosis for malignancy (5). FNAB diagnosis of extremity soft tissue mass had overall only 75.4% accuracy. Open biopsy had the most accuracy in soft tissue mass diagnosis in all aspects such as malignancy determination, accurate diagnosis in all appropriate treatment guidelines (6). Masses in the neck region were found to be more common in adults in presentation of head and neck cancer. It was found after detailed history in the initial work-up. Fine-needle aspiration biopsy of the neck and comparison make up the importance in the first-line of investigation (7).

Sampling errors such as false- positive, false- negative etc, presents a minor problem with FNAB. FNAB is a convenient way to diagnose the mass of the head and neck (8). The study discovered that FNAC is a convenient, fast, low-cost, and minimally invasive method for diagnosing various types of head and neck swellings (9). In overall, fine needle aspiration biopsy (FNAB) may have many advantages and disadvantages but the knowledge and its method must be known to everyone.

The main aim of the study is to evaluate the knowledge, awareness and understand the attitude of undergraduate dental students on their knowledge on aspiration biopsy.

MATERIALS AND METHODS

A survey was designed based on spreading the knowledge about aspiration biopsy among dental undergraduate students. The questionnaire was then distributed through Google forms (online survey link). The study population included 100 dental undergraduate students. The participants were explained about the purpose of study in detail. Later the questions were carefully studied and the corresponding answers were marked by the participants. The responses were collected and statistically analysed using SPSS software version 21.0. Descriptive analysis was used to calculate the summarised qualitative data and Chi Square test was used to analyse and compare the data of the participants knowledge on aspiration biopsy. Table- 01 depicts the questionnaire that was given to the participants of the study with their responses.

TABLE 01: QUESTIONNAIRE WITH THE RESPONSES

QUESTIONS	RESPONSES	PERCENTAGE
1. Gender		
Female	23 responses	23%
Male	76 responses	76%
Prefer not to say	1 responses	1%
2. Year of study		
3rd year	49 responses	49%
4th year	25 responses	25%
Intern	26 responses	26%
3. Are you aware of fine needle aspiration biopsy?		
Yes	86 responses	86%
No	12 responses	12%
Maybe	2 responses	2%
4. Do you think aspiration biopsy uses a syringe or needle to collect samples?		87%
Yes	87 responses	11%
No	11 responses	2%
Maybe	2 responses	
5. Ultrasound guided fine needle aspiration biopsy provides optimal, stable visualisation of the lesion.	59 responses	59%
Strongly agree	35 responses	35%

Agree Disagree	6 responses	6%
6. Advantage(s) of FNAC Rapid Cost effective Conservative All the above	 18 responses 20 responses 8 responses 54 responses	 18% 20% 8% 54%
7. FNAC is the diagnostic procedure of choice for lesions involving salivary glands. True False	 93 responses 7 responses	 93% 7%
8. If straw colour fluid is collected during aspiration biopsy, then what does it indicate? Abscess Traumatic bone cavity Cyst	 70 responses 22 responses 8 responses	 70% 22% 8%
9. If pus is collected during aspiration biopsy, then what does it indicate? Traumatic bone cavity Abscess Cyst	 27 responses 63 responses 10 responses	 27% 63% 10%
10. Are there any serious complications due to fine needle aspiration biopsy procedure? Yes No Maybe	 80 responses 15 responses 5 responses	 80% 15% 5%
11. Do you think local anesthesia is to be given before the procedure? Yes No	 64 responses 33 responses	 64% 33% 3%

Maybe	3 responses	
12. Do you think you have adequate training to perform fine needle aspiration biopsy in your clinical practice?		
Yes	86 responses	86%
No	11 responses	11%
Maybe	3 responses	3%

RESULTS

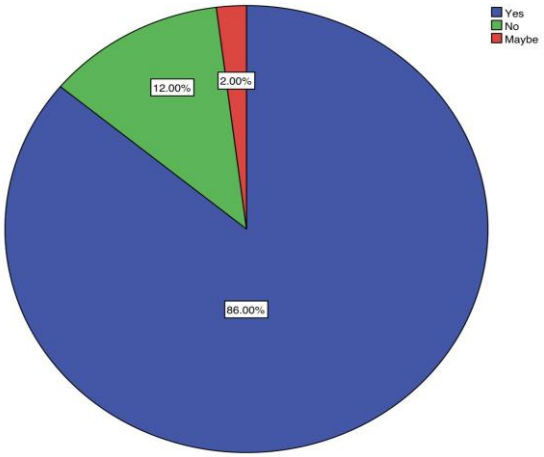

FIG 01: Pie chart depicts the level of awareness of the study participants on aspiration biopsy. 86% (blue) of the participants were aware of aspiration biopsy, 12% (green) were not aware, and the remaining 2% (red) responded maybe.

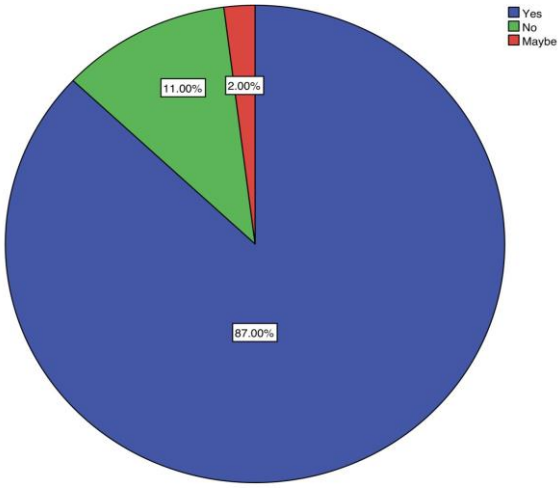

FIG 02: Pie chart depicts whether the participants think that a syringe or a needle is used to collect a sample in aspiration biopsy. 87% (blue) of the participants responded yes, 11% (green) responded no, and the remaining 2% (red) responded maybe.

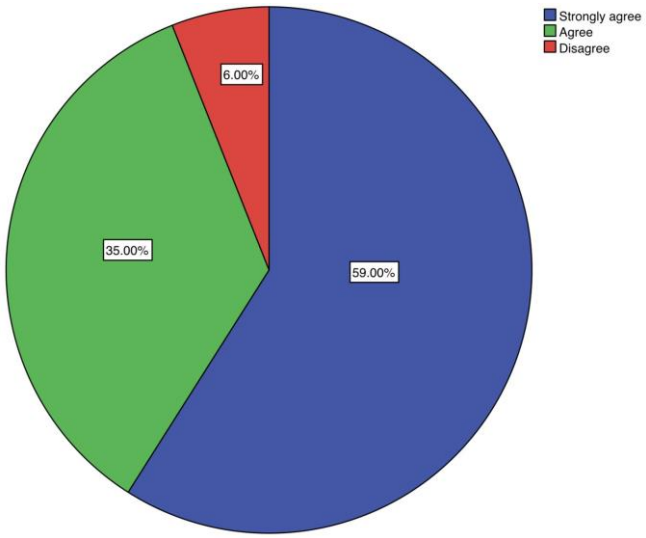

FIG 03: Pie chart depicts the participants thoughts on whether ultrasound guided fine aspiration biopsy provides optimal, stable visualisation of the lesion. 59% (blue) of the participants strongly agreed, 35% (green) agreed, and the remaining 6% (red) disagreed to the above stated point.

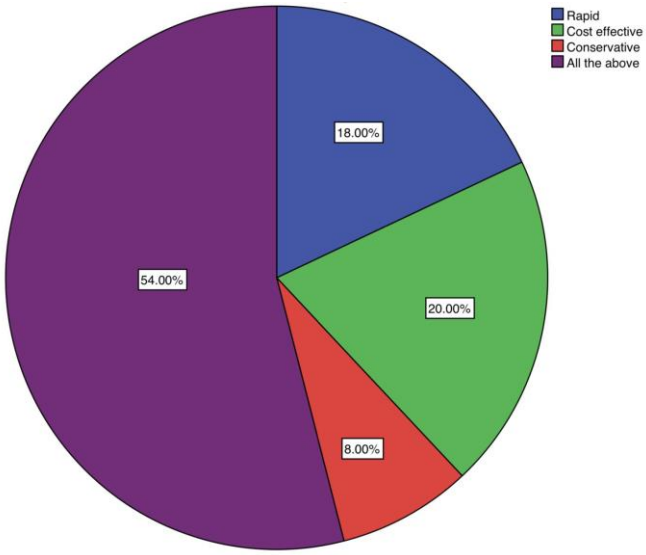

FIG 04: Pie chart depicts whether the study participants were aware of the various advantages of aspiration biopsy. Majority of the participants (54%) (purple) were aware of all the advantages and chose all of the above, 20% (green) chose ‘cost effective’, 18% (blue) chose ‘rapid’ and 8% (red) chose ‘conservative’.

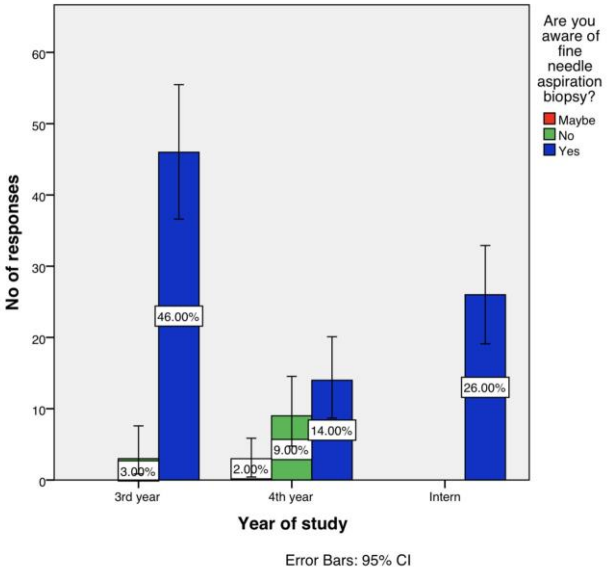

FIG 05: Bar chart represents the association between the year of study of the participants and their awareness on fine needle aspiration biopsy. X axis represents the year of study of the participants, Y axis represents the number of individuals who were aware (blue) and not aware (green) and those who were sort of aware (red). Participants who were in 3rd year were more aware of fine needle aspiration biopsy than the 4th year and internship participants, This is statistically significant. Pearson's Chi square value= 0.000, p value=0.000 (<0.05).

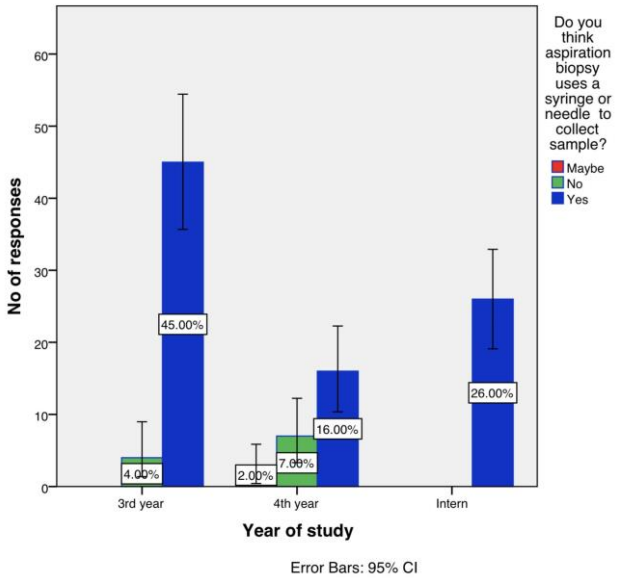

FIG 06: Bar chart represents the association between the year of study of the participants and whether the participants think that a syringe or a needle is required for collecting samples in fine needle aspiration biopsy. X axis represents the year of study of the participants, Y axis represents the number of individuals who were aware (blue) and not aware (green) and those who were sort of aware (red). More no of participants from 3rd year agreed to the use of syringe or a needle for collecting samples in fine needle aspiration biopsy than the 4th year and internship participants and more no of 4th year participants disagreed to the statement.

However it is statistically significant. Pearson's Chi square value= 0.001, p value=0.001 (<0.05).

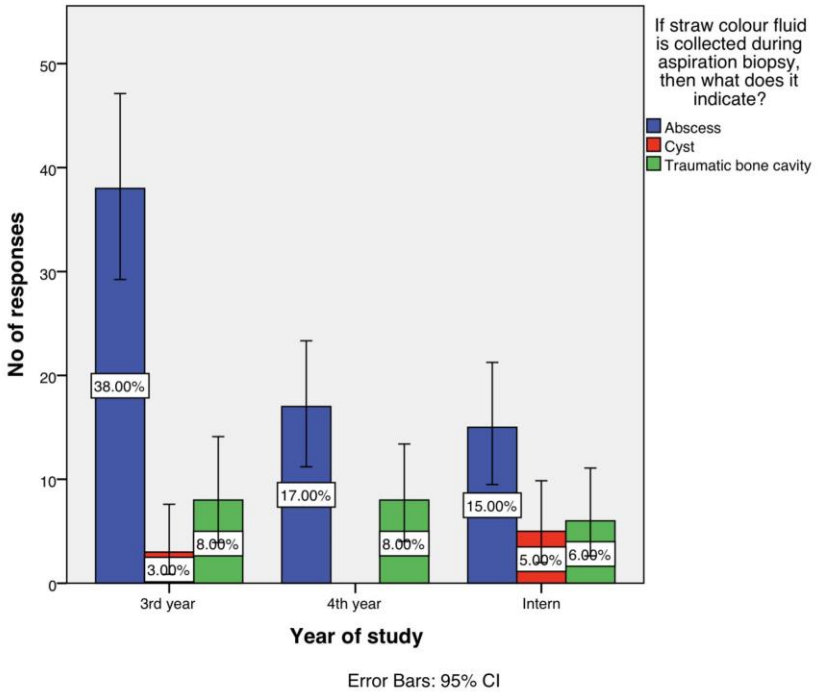

FIG 07: Bar chart represents the association between the year of study of the participants and what the participants think the collected sample indicates in a fine needle aspiration biopsy. X axis represents the year of study of the participants, Y axis represents the number of individuals who chose abscess (blue), traumatic bone cavity (green) and those who chose cyst (red). 5% from the interns and 3% from 3rd year participants chose the correct answer being cyst. This is statistically not significant. Pearson's Chi square value= 0.057, p value=0.057 (>0.05).

DISCUSSION

The data from the present study was collected and statistically analyzed using SPSS software. From the results of the survey distributed among the participants, it was noticed that the gender of the participants, 76% were found to be female, 23% were found to be male and the remaining 1% preferred not to reveal their identity (Table 01). Out of the 100 participants who had participated, 49% belonged to 3rd year, 25% belonged to 4th year and remaining 26% were doing their internship (Table 01). 86% of the participants were aware of aspiration biopsy, 12% were unaware and 2% were sort of aware (Figure 01). When a question i.e., whether aspiration biopsy uses a needle or a syringe to collect samples, 87% answered yes, 11% answered no and the remaining 2% sort of agreed (Figure 02). 59% of the participants strongly agreed, 35% agreed and 6% agreed to the statement 'Ultrasound guided fine aspiration biopsy provides optimal, stable visualisation of the lesion' (Figure 03). Various advantages of aspiration biopsy were asked to the participants, 18% answered rapidly, 20% answered cost effective, 8% answered conservative and 54% opted for all the above stated options (Figure 04). A true or false question was asked, 'Fine needle aspiration cytology is the diagnostic procedure of choice

for lesions involving salivary glands'. 93% opted true while remaining 7% opted for false (Table 01). There were two questions asked on what the collected sample indicated: a cyst, abscess or a traumatic bone cavity. When the participants were asked if straw coloured fluid was collected, what it indicated 8% answered the correct option being cyst, remaining 70% chose abscess and 22% traumatic bone cavity (Table 01). When the participants were asked if pus was collected, what it indicated 63% answered the correct option being abscess, remaining 27% chose traumatic bone cavity and 10% chose cyst (Table 01). 80% participants stated that there might be serious complications due to the fine needle aspiration biopsy procedure, 15% disagreed and 5% were not sure (Table 01). 64% think local anaesthesia must be given before the procedure, 33% thought it was unnecessary to use and remaining 3% were not sure on whether local anaesthesia could be used before the procedure (Table 01). The last question asked to the participants was whether they think they have adequate training to perform fine needle aspiration biopsy in their clinical practice, 86% told yes, 11% told no and 3% were not sure whether they had enough training (Table 01).

There were a total of three correlation graphs done using the SPSS software. In Figure 05, it was seen that 46% from 3rd years, 14% from 4th year and all the 26% of interns were aware of fine needle aspiration biopsy. While 3% from 3rd year and 9% from 4th year were not aware and 2% from 4th year were not so sure about whether they were aware of aspiration biopsy. In Figure 06, it was seen that 45% from 3rd year, 16% from Ruth year and 26% from internship participants agreed on using syringe or needle in collecting samples. 4% from 3rd year and 7% from 4th year participants disagreed on the uses of needle or syringe for collecting samples while 2% from 4th year were not sure. In Figure 07 it was seen that 3% from 3rd year and 5% from internship participants chose cyst being the correct option. The remaining 38% from 3rd year, 17% from 4th year and 15% from internship participants chose abscess and 8% from 3rd year, 8% from 4th year and 6% from internship participants chose traumatic bone cavity.

In a research study done byAna Paula et al, the diagnostic results from the FNAB were compared with either excisional or incisional biopsy diagnostic results. With the cost of medical services, any procedure that speeds up the diagnostic process, reduces the patient's physical and psychological distress, and reduces hospitalisation costs would be extremely valuable. FNAB has a high success rate of detecting both malignant and benign lesions, but it had poor accuracy rate in producing a final diagnosis (10). With the cost of medical services, any procedure that speeds up the diagnostic process, reduces the patient's physical and psychological distress, and reduces hospitalisation costs would be extremely valuable (11). After discussing the results of the present study, it was seen that many were still not aware of the exact reason for the use of fine needle aspiration biopsy. Few of the limitations seen in this study was small sample size, can focus on the general public, include more questions based on aspiration biopsy. Our team has extensive knowledge and research experience that has translated into high quality publications (12–21),(22–25),(26–30) (31). Limitations seen in this study can be included in future research for better spread of awareness among the dental students.

CONCLUSION

FNAB is a simple, quick, inexpensive, and minimally invasive technique to diagnose different types of head and neck swellings and swellings seen in other regions. In the present study, the participants had adequate knowledge about aspiration biopsy which can be enhanced even more by various public surveys and spreading awareness.

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CONFLICT OF INTEREST

NIL

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