

A Delphi Consensus Study to Identify Anatomy Component of the Urogenital System for Teaching Medical Students

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ABSTRACT

Background: Anatomy is an important basic science in medical education. Changes to the modern medical curriculum have an effect on reducing anatomy learning time which is not balanced with the number of anatomical materials that medical students must learn. In addition, there is a need for anatomical materials focused on the most relevant topics in clinical practice. Therefore, this study aimed to identify the core anatomical materials of the urogenital system for medical students as part of the development of medical curriculum in Indonesia.

Summary of work: This qualitative study used the two-round Delphi method. The subjects were general practitioners in Indonesia who were selected by purposive sampling according to the inclusion criteria that had been established. The first-round questionnaire was filled by giving important or not important value to the existing anatomical materials. The panel could add new materials in the first-round. The results of the first-round questionnaire were processed into the second-round, that then were rated with a range of 1-4 according to the importance level by the panel. The consensus level set at 51%.

Result: The first round of Delphi produced 215 from 264 anatomical materials to be processed in the next round. The second round Delphi produced 68 anatomy core materials of urogenital system with clinical correlation in the material that was considered important by the panel.

Conclusion: The anatomical core materials of the urogenital system that needs to be known by medical students are 68 materials from 264 anatomical materials compiled in the questionnaire.

Keywords: anatomy curriculum, Delphi method, urogenital system.

1. INTRODUCTION

Anatomy is one of the important basic sciences in medical practice that all medical students must acquire complete knowledge or skill in this science during their period of preclinical and clinical education. They must understand that anatomy is as the basis for understanding the pathogenesis of disease and its management principles in clinical practice.[1] However, despite the fact that it is an important basic science in the medical education curriculum,[2] anatomy is still considered a difficult subject[3] even by graduates who still feel that their mastery of anatomy knowledge is inadequate.[1] This phenomenon is feared to cause medical errors in the future.[4] Doctors should ideally have anatomical

abilities and knowledge that can be used as a basis for carrying out their daily clinical practice.[5]

Due to the increasing medical competencies that must be met in the medical education curriculum,[4] significant changes must be made, such as reducing the allocation of learning time for anatomy.[6] This is certainly one of the things that affects the quality of anatomy subject mastery.[7] Actually, not all anatomical material needs to be studied by medical students. Reduced contact hours given to the students for anatomical material can be overcome by certain methods that focus more on the most relevant topics in clinical practice. However, for the time being, there are still differences in perspectives between general practitioners, anatomy instructors, and medical students so that studies

to determine the intersection of these three perspectives need to be intensively carried out.[8]

Some studies[1,9,10] have not specifically discussed the core of anatomical materials for the urogenital system which can be used as a reference for anatomical learning for medical students. The urogenital system competency is stated in the doctor's competency (the 2012 Indonesian Doctor's Competency Standard/SKDI 2012) as a reference when practicing as a general practitioner.

2. METHOD

The purpose of this study was to obtain consensus on the core materials of the anatomy of the urogenital system for medical students. This qualitative study was conducted using the Delphi method two rounds.

The subjects were general practitioners in the Indonesian region who met the inclusion. These criteria included the length of service of at least 3 years, and having graduated a maximum of 10 years from medical school. Researchers contacted the subject via social media, i.e., WhatsApp and email. Researchers started with just a few panels. Then the researchers asked for recommendations from the respondents, doctors who met the inclusion criteria and worked in different regions. Finally, 25 general practitioners (GPs) who practice spread in various cities in Indonesia were chosen as the subjects.

In the first round of a two-round questionnaire, the panel chose the importance of an anatomical materials (total 264 anatomical materials). Panels choose based on the level of competence in the Indonesian doctor competency standard 2012. In addition, the subject added new materials to this round. The results of the first round that met 50% + 1 of the panels choosing 'important' were included in the second questionnaire. The questionnaire was given via social media, i.e., WhatsApp and email.

In the second round, the panel assessed the importance of anatomical material using a 1-4 scale and was asked to write clinical correlations of material that was considered important. Anatomical materials chosen by 51% of the panels with grades 3 and 4 would be the core material of the anatomy.

Ethical approval for this study was issued by the Health Research Ethics Committee Faculty of Medicine Universitas Sebelas Maret with number 81/UN27.6/KEPK/2018.

3. RESULT

The characteristics of the study subjects can be seen in table 1 whereas the diversity of institutions where the study subjects work can be seen in Figure 1.

Table 1. Characteristic of Study Subjects

| Characteristic | N | % |
|---------------------------|----|------|
| Sex | | |
| Male | 11 | 73.3 |
| Female | 4 | 26.7 |
| Age (yr) | | |
| 29-31 | 3 | 20 |
| 32-34 | 12 | 80 |
| Year of graduation | | |
| 2010-2011 | 11 | 73.3 |
| 2012-2013 | 1 | 6.7 |
| 2014-2015 | 3 | 20 |
| Length of service | | |
| 3 – 4 yr | 4 | 26.7 |
| 5 – 6 yr | 1 | 6.7 |
| 7 – 8 yr | 10 | 66.7 |
| Address | | |
| Surakarta | 6 | 40 |
| Sukoharjo | 2 | 13.3 |
| Yogyakarta | 1 | 6.7 |
| Salatiga | 1 | 6.7 |
| Semarang | 1 | 6.7 |
| Brebes | 1 | 6.7 |
| Bekasi | 1 | 6.7 |
| Nganjuk | 1 | 6.7 |
| Sintang | 1 | 6.7 |

In the first round, only 20 (80%) of the 25 GPs receiving Delphi questionnaires returned the questionnaires. In the second round, only 15 questionnaires (75%) were returned from 20 questionnaires distributed. The first round of the Delphi questionnaire consisted of 15 sections, each of which was described in 264 anatomical materials. The materials considered important by 50% + 1 from all Delphi panels would be re-compiled in the second round of the Delphi Questionnaire. There was no material added to the first round of Delphi, but there were several anatomical materials omitted in the second round of the Delphi questionnaire. The number of materials omitted was 49, so the second round of the Delphi questionnaire contained 215 anatomical materials contained in 15 sections.

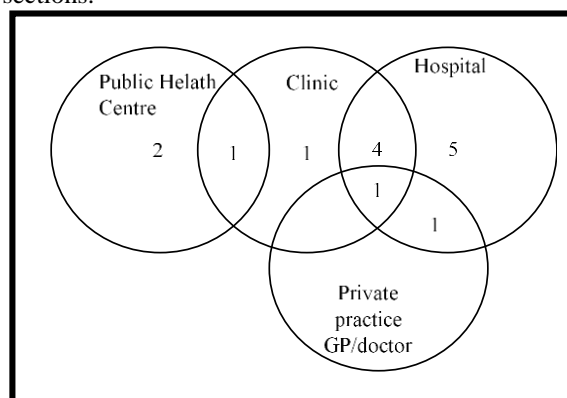


Figure 1. Origin of Delphi Panel Work Institution

The materials from the first round of Delphi questionnaire included in the second round of Delphi were 215, and then, of the total number remained, 68 (31.63%) were chosen as the core materials.

Table 2. Amount of Core Material in Each Part of the Urogenital System

| Part of Urogenital System | Number of Round II Delphi Materials | Number of Core Materials |
|---|-------------------------------------|--------------------------|
| Ren | 35 | 7 |
| Suprarenalis gland | 7 | 5 |
| Ureter | 13 | 5 |
| Bladder | 24 | 4 |
| Urethra | 17 | 9 |
| Penis | 34 | 12 |
| Scrotum | 14 | 5 |
| Testis | 22 | 8 |
| Epididymis | 10 | 2 |
| Deferens duct | 6 | 2 |
| Vesicula seminalis | 5 | 2 |
| Ejaculatorius duct | 6 | 3 |
| Prostate gland | 11 | 2 |
| Bulbourethralis gland | 3 | 2 |
| Lymphatic drainage of the urogenital system | 9 | 0 |
| Total | 215 | 68 |

4. DISCUSSION

Based on the objective of the study, one method in making consensus, i.e., the Delphi was used. This method is a communication structure that aims to disentangle from detailed critical discussion, for example in the formation of education guidelines and standards.[11] The Delphi method of two rounds is similar to a study on the preparation of regional anatomy syllabus for medical students[12] and the consensus of Indonesian anatomical experts regarding core materials.

Although the number of anatomical materials that becomes the core materials in each section varies, there is always material that comes into the core material in each section. The material is the function and topography of organs in the urogenital system. The panel gives important and very important values on these two topics ranging from 80% - 100%. The main reason why these two topics are important is their relevance to the history and procedures of physical examination performed in the diagnosis. In addition, general practitioners also need to understand the physiology of each organ to understand the function of these organs, so

that they can determine the pathophysiology of the related disorder. This is in accordance with the study of Ganguly (2010) that understanding of organ topography is a fundamental thing that needs to be mastered to be able to read the results of radiological images, which is one of the competencies of general practitioners.[6]

The ren section produces 7 core anatomical materials accompanied by reasons or clinical correlations regarding the choice of the importance of the topic. Ren function topics are considered important because they are related to history taking and physical examination of the diagnosis of a disease. In addition, the panels consider that general practitioners need to master the pathogenesis and pathophysiology of diseases that occur in ren. An understanding of kidney function is also needed in terms of consideration of giving medicines to patients. As on the topic of ren function, the topography of the ren and pelvis is assessed as important by the panels related to physical examination and identification of the location of the ren abnormality. One example of the importance of knowledge about ren topography is the examination of renal pain and bimanual renal palpation to assess the possibility of pyelonephritis.[13] Another topic assessed by the panels having an important clinical correlation is the vagus which is the main nerve in the ren organ.

The section of the suprarenalis gland produces 5 anatomic core materials from 10 topics in the initial questionnaire. The panels assess the function of the suprarenalis gland important with regard to its role in the endocrine system. The suprarenalis gland produces various steroid hormones and catecholamines. These hormones have a major effect on regulating metabolism and homeostasis. In addition, cortisol and epinephrine which are also hormones from the suprarenalis gland have an important role in the body's mechanism in response to stressors through the hypothalamic-pituitary-adrenal axis system.[14] The topography of the suprarenalis gland is considered important as a basic knowledge for general practitioners regarding the location of this organ.

The function of the ureter is considered important by the panels because it is the basic science associated with other organs in the urogenital system. The ureter is two tubes, which are on the right and left side, which function to drain urine from the ren to the urinary vesical.[15] Therefore, by understanding the function of the ureter properly, the general practitioner can identify the pathophysiology if there are abnormalities in the ureter. The topic of ureteral topography and the location of ureteric constriction is considered to be related to the basis of a physical examination in identifying the location of a ureteral abnormality, such as a ureteric stone or urolithiasis. There are 3 locations of narrowing of the ureter which generally become the place where ureteral stones are lodged, i.e., in the proximal, middle, and distal parts.[16]

The urethra section produces 9 core materials from 22 topics in the first round of the Delphi questionnaire. The topographic function of the urethra is considered important by the panels because it is the basis of history and physical examination. Doctors need to understand urethral function in order to identify urethral abnormalities in emergency cases such as urethral trauma, both anterior and posterior. In addition to the two topics above, the difference between masculine and feminine urethra also has clinical correlations which must be mastered by general practitioners. The difference in anatomical structure between masculine and feminine urethra is related to the incidence of urinary tract infections in women that are higher than men in each age group.[17] Ostium urethrae externum is important to study because general practitioners must master the clinical skills of the urethra swab which is a standard diagnosis of several diseases, such as genital syndrome.

The function and topography of the penis are considered of clinical importance as they relate to the history taking and physical examination. The panel said that general practitioners must perform inspection and palpation of the penis properly and correctly, according to the list of clinical skills available in SKDI 2012. Besides, penile topography is an essential topic in clinical practice, mostly when a general practitioner performs circumcision procedures. Other issues on the part of the penis considered necessary when performing circumcision are the cutis, glans penis, corona glandis, collum glandis, prepuce, and frenulum preputii.

The testis section produces eight-core materials from 25 initial materials of the first round Delphi questionnaire. The topic of testicular function and topography is considered necessary because of its clinical correlation in history taking. As with other organs, testicular function material and topography mastery is also crucial concerning physical examination procedures. The panel said that general practitioners must make a proper diagnosis in cases of emergency testicular organs such as testicular torsion so that patients can get immediate treatment.

This study has limitations, including research results that are not suitable for certain clinical cases such as n. dorsalis penis. This structure was influential in the circumcision procedure but did not get the Delphi panel's importance, which reached the consensus level. Due to the panel's understanding regarding the use of these structures, they have forgotten the nomina anatomica. Also, lymphatic drainage, which plays a role in spreading infection and malignancy, does not receive a significant value that meets the consensus level.

The obstacles encountered in this study are a number of Delphi panels that have forgotten *nomina anatomica* and SKDI 2012, especially those which are the domain of competence of general practitioners. These obstacles can be handled, because the Delphi panels that

need further information or explanation of the questionnaire that was filled out have contacted and asked us directly via WhatsApp so that we can directly answer the Delphi panel questions. Another obstacle that we experience is the delay in collecting questionnaires. This is because the Delphi panels have other activities, so it requires routine follow-up. However, during the follow-up process, there were a number of panels who suddenly resigned and could not be contacted until the agreed deadline, causing a reduction in the number of panels from the first round of Delphi to the second round of Delphi.

5. CONCLUSION

The consensus of general practitioners regarding the produced anatomic core materials of the urogenital system is 68 materials from 264 materials compiled in the questionnaire.

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