**1st Regional Journal Club Report: Pakistan Physiological Society & SAAP Education Subcommittee.**

Prof. Dr. Munazza Asad

Head of Department of Physiology

 Associate Dean PGME

Al-Nafees Medical College, Isra University, Islamabad. Pakistan



On February 29, 2024, an “**Introduction to Journal Club”** was held at the Al-Nafees Medical College, campus of Isra University, Islamabad. This event was led by Pakistan Physiological Society in association with the South Asian Association of Physiologists' Education Subcommittee. Three physiology legends—Maj Gen (Retd.) Prof. Muhammad Aslam, Prof. Dr. Umar Ali Khan, and Prof. Rashid Mahmood gave the introduction to Journal Club before the start of the first official presentations by postgraduate trainees. They emphasized that the Journal club's primary goal is to advance and share knowledge and research in the field of Physiology, with an emphasis on applied Physiology. President of the Pakistan Physiological Society Prof. Dr. Rashid Mahmood gave the program's introductory remarks. Honourable chief guest Maj Gen (Retd.) Prof. Muhammad Aslam focuses on the nuts and bolts of journal club. Feedback through questionnaire or rubric for evaluation is necessary to determine the usefulness of Journal Club. He elaborated “ten tips for scientific journal club” which are as follows; should be held on monthly basis, designate a leader, pre-read research articles, build a community, choose relevant papers, and to make engaging presentations. He concluded that the Journal club is a great tradition in medical learning and to set goals before the commencement of this activity for fruitful learning. Engage and empower the faculty and PG trainees to be part of this.

The second honourable speaker was Prof Dr Umar Ali khan, immediate past president of Pakistan Physiological Society and Pro Vice Chancellor, Isra University started his presentation on Journal Club: “What and Why”. He elaborated that Journal Club is an educational meeting in which a group of individuals read, evaluate, and discuss current articles from the relevant literature. The presentation must comprise of three parts. (1) Reasons of selection of research article.

2) Presentation itself should include background information, context, aims, methods, results, and a conclusion.

3) Assessment & Critique.

The paper selected should be as per theme of current period, have been cited several times, relevance to health context of Pakistan, and should be regarding applied Physiology. It should also report something new/improved or it can be about the application of something already existing, not be too long or domain heavy, and lastly should be approved by the Supervisor. The paper must pose six questions starting from the research question then rationale, methods, results, discussion and lastly, what we can do with the information? Then he further explained each question in detail.

The problem statement should explain the research question; who, what, where when and why? The purpose of the study and the gap in literature that this study will fill. The next question was regarding literature review which should be regarding previously studied topics or variables, relating the current project to historical research, pointing out critical weaknesses in previous studies, current deficit in knowledge and provide recent references. The third question describes the conceptual/ theoretical framework; this supports the hypothesis and study rationale. It also identifies the relationship between variables. The next two questions were regarding results & discussion. Results (statistical findings) related to the variable are analysed and statistical methods & tests used for analysis clearly identified. Findings related to large conceptual framework and to answer the questions posed. Moreover, imitations and weaknesses were adequately addressed. The last question was about what it meant to the practitioner, and what the results of the study signify and can bring about a change in practise. Lastly the critical appraisal is the process of systematically examining the research evidence to assess its validity, results, and relevance before using it to inform a decision. In summary conclusion, the presenter accepts all the authors conclusions presented or give modified conclusions that he would accept.

Prof. Dr. Umar Ali Khan's closing remarks resulted in the decision to have PG trainees lead one journal club per month. The meetings will last forty minutes for discussion and twenty minutes for presentations. The supervisors of the individual institutes will ensure that all postgraduate trainees participate in healthy discourse, and their involvement will be essential. The announcement of the ASU (Aslam Shahnaz Umar) Award of cash prize of Rs 5000/ for postgraduate trainee was made possible by the consent of the three esteemed physiologists.

On the above criteria our **First Journal Club presentation** entitled “Urine concentration Impairment in sickle cell anemia: genuine nephrogenic diabetes insipidus or osmotic diuresis?” was conducted on March 11th, 2024. It was presented by Dr. Yusra Hameed, a FCPS II PG trainee under supervision of Prof. Munazza Asad, at Al Nafees Medical College, Islamabad, Pakistan. This article was published in American Journal of Physiology, Renal Physiology in 2023. Correspondence author was J-P Haymann (Jean-phillippe.haymann@aphp.fr).

The primary objective of this study was to investigate the mechanism behind hyposthenuria in patients with sickle cell anemia. The study specifically aims to determine if urine concentration impairment in SCA patients results from genuine NDI or osmotic diuresis.

Sickle cell nephropathy, a key complication, involves glomerular damage, tubular injury, and kidney failure, prominently affecting the inner medulla and leading to complications such as hyperfiltration, albuminuria, reduced NH4 excretion, and hyposthenuria. This observational study was conducted at the Department of Renal Physiology at Tenon Hospital, Paris, France, involving 55 SCA patients. The methodology included clinical examinations, mGFR determinations, laboratory tests (including fasting plasma ADH concentration), and fasting and 24-hour urine collections. Inclusion criteria focused on a specific fasting plasma ADH range, while exclusion criteria aimed to ensure the accuracy of the results by minimizing variables that could affect ADH levels and urine concentration.

The study found that 82% of SCA patients had elevated fasting plasma ADH levels, with the majority falling into the middle ADH tertile. Despite high ADH levels, the fasting urine osmolality was low across the board, suggesting an impairment in urine concentration that was not due to NDI. This was further supported by the absence of significant differences in fasting urine osmolality across ADH tertiles and the lack of correlation between ADH levels and fasting urine osmolality. Additionally, hormonal regulation data showed ADH was associated with plasma tonicity and natremia but not significantly correlated with free water clearance or fasting osmolal clearance, indicating ADH inefficiency or a plateau effect.

The study's findings indicate that urine concentration impairment in SCA patients is more likely related to osmotic diuresis rather than true NDI. This conclusion is supported by comparisons to hydration indices in healthy populations and analysis of ADH's correlation with urine osmolality and hormonal regulation. The discussion also integrates findings from previous studies to provide a comprehensive understanding of the mechanisms at play.

The author concluded that most adult patients with SCA exhibited mild urine concentration impairment (UCI) without evidence of genuine NDI. The study concludes that the elevated fasting plasma ADH concentration observed in most SCA patients is likely a response to osmotic diuresis, with implications for the management and treatment of SCA-related nephropathy.

The study acknowledges limitations such as the lack of renal imaging, daily water intake monitoring, fasting thirst scoring, and osmoreceptor sensitization assessment, which could provide further insights into the mechanisms behind UCI in SCA patients.

Future research should focus on the correlation between elevated ADH levels in SCA and chronic kidney disease (CKD), with an emphasis on pediatric populations to explore potential reversibility of UCI with improved renal function.

Ultimately, Dr. Yusra Hameed, a postgraduate trainee, received the ASU(Aslam, Shahnaz Umar) award (a cash prize and certificate) for her outstanding presentation.

A few images from the award ceremony.





 