

How to Write a Scientific Paper

Focus on results and discussion

Dr Munir Abu-Helalah

Is the paper worth writing?

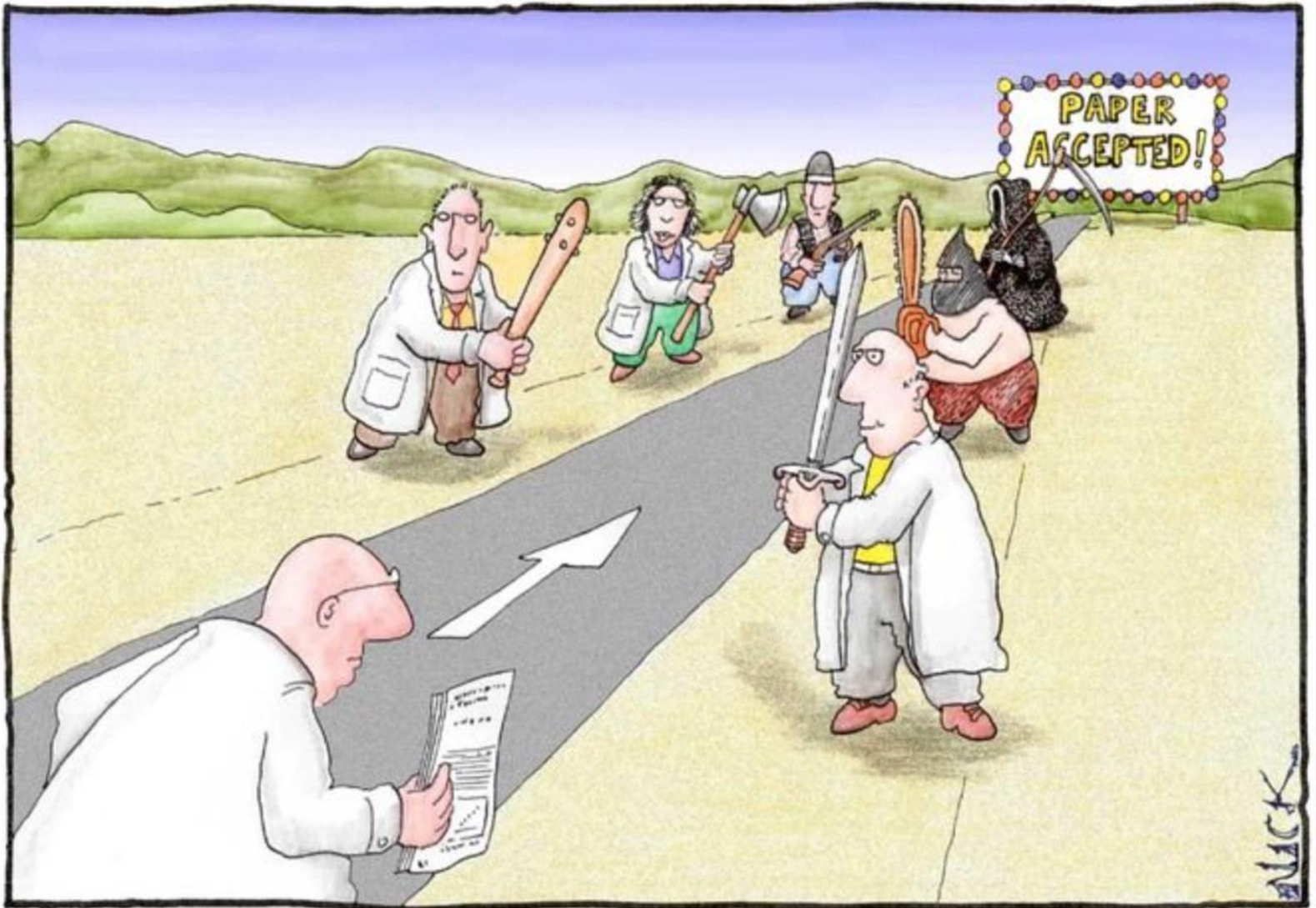
- What's in the literature?
- "So What?"
- It's a lot of work (average 20-30 drafts). Don't do it unless its worth it.

Which journal?

- i. Is topic of my paper within its scope and format?
- ii. Would it match my audience?
- iii. Ask mentor or other senior researchers: appropriateness
- iv. Impact Factor
- v. Consequences of wrong decision: time lost; failure to publish

A scientific article as a critical argument

- a. Statement of problem; posing a question
- b. Presentation of evidence
- c. Assessment of the validity of the evidence in the face of ..
 - a. strengths/weaknesses
 - b. other evidence
- d. Conclusions



Most scientists regarded the new streamlined peer-review process as "quite an improvement."

Scientific writing

- A precise way to explain what you did, what you found, and why it matters

CLA  **RITY**

Journal Impact

- Impact factor: A measure of the frequency with which the 'average article' in a journal has been cited in a particular year
- Helps evaluate a journal's relative importance, especially compared to others in the same field
- Impact factor >5 considered very good
- Other measures: SJR scientific journal rankings

Choosing where to submit

- **‘Very High impact’ general medicine journals**
e.g. Lancet, British Medical Journal, New England Journal of Medicine, JAMA etc....
 - +Wide readership
 - +High impact
 - +Great for CV
 - +Often very quick to reject
 - Only accept a tiny minority of papers
 - Laborious process of review, revision and publication.

Instructions to authors

- Make sure your paper conforms exactly to the journals specifications
- Most papers can be shortened!

Writing Styles.....



Writing your paper.....

Think of yourself as a reader for a moment. What kind of papers do you like to read? Short, meaty, and clear most likely. Well, then, write short, meaty, and clear papers yourself. Short, meaty and clear papers are most likely to be understood. The truth of this proposition will come home to you as you read biomedical writing and discover how easy it is to get the wrong message.

Mimi Zeiger⁴

The Introduction

- Draw audience in; be provocative
- Target journal specific audience
- Identify gaps in knowledge
- End with question/hypothesis



Knee Pain, Why?

Introduction

- Decide on the level of background information needed; do not just repeat the obvious first line you have read in every paper
- Be clear about what the problem you are addressing is and how your study proposes to answer this

The introduction of the manuscript not the report!

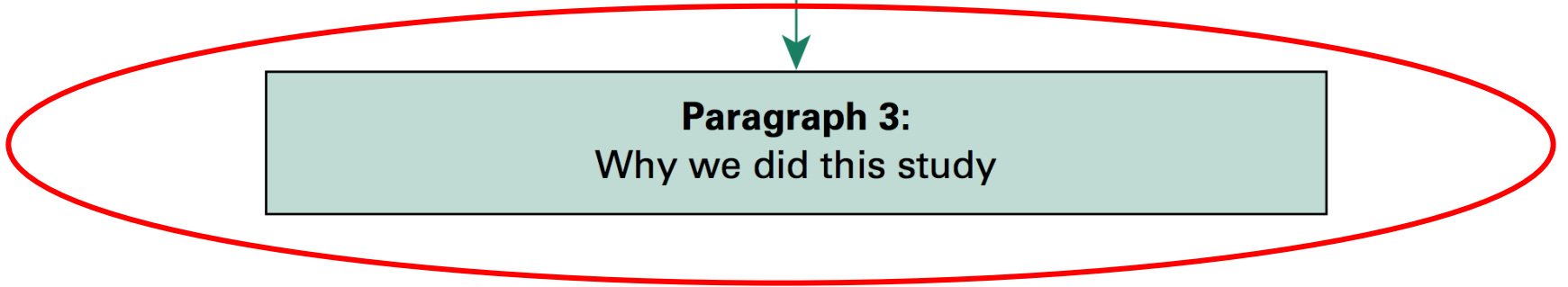
Paragraph 1:
What we know



Paragraph 2:
What we don't know



Paragraph 3:
Why we did this study

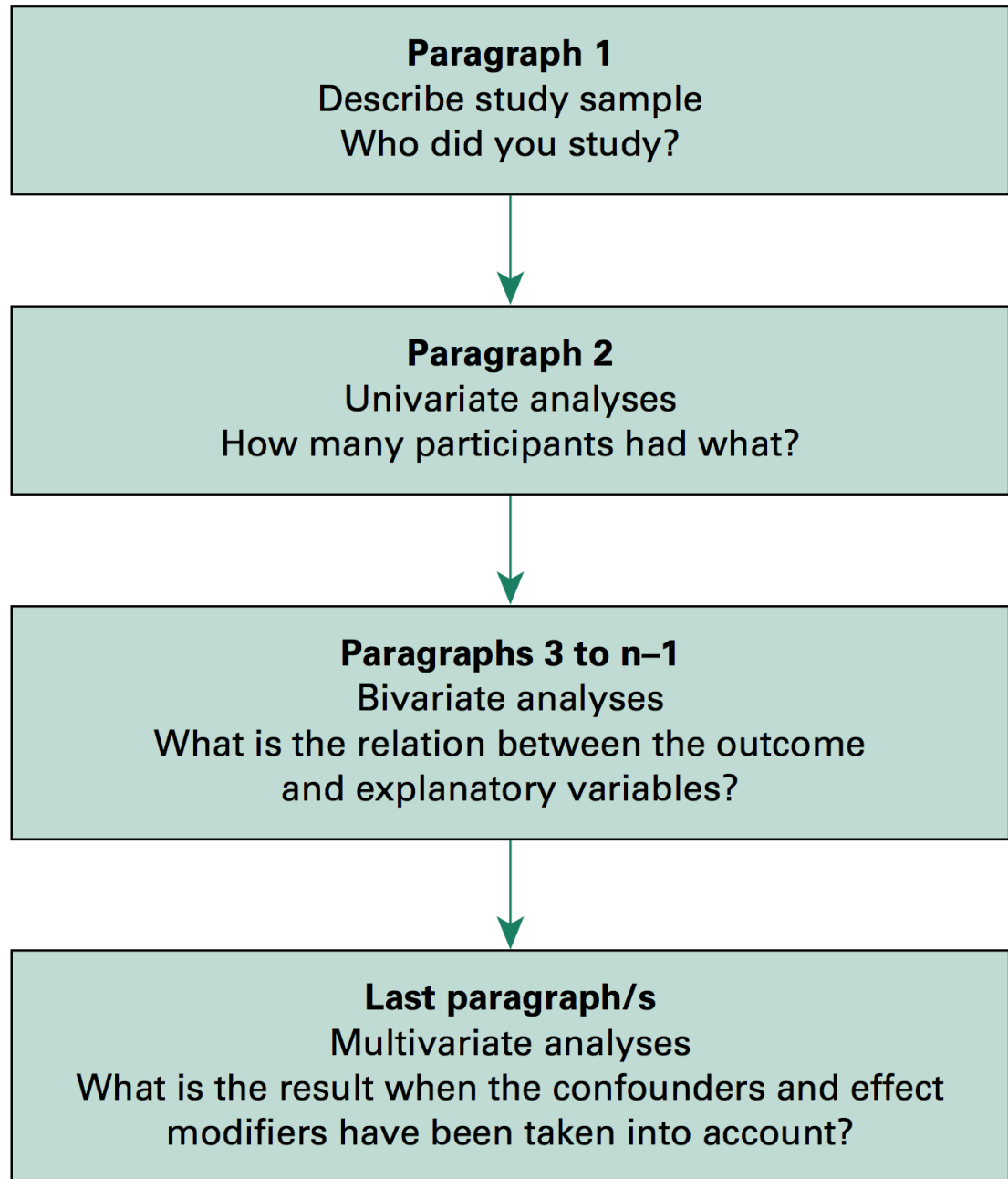


Methods

Describe how you obtained your results in a way that others could replicate them (use CONSORT, STROBE or similar structure)

- Study design
- Participants
- Sample size calculation
- Define exposures and outcomes
- Statistical analysis
- Ethical approval

Results



Results

- Organize around tables/figures
- Present tabular results selectively in text
- Past tense
- No interpretation; just the facts!
- Tables should stand on their own
- One paragraph per table or figure

Baseline characteristics	All participants	Smokers	Non-Smokers	P value
		n (%)	n (%)	
Age				
Gender				
Education				
Average monthly income				
Living in rural or urban area				
History of chronic medical disease				
Number of households				
..etc				

Results

- Start with

Number of participants,
key characteristics such
as gender, mean or
median age..

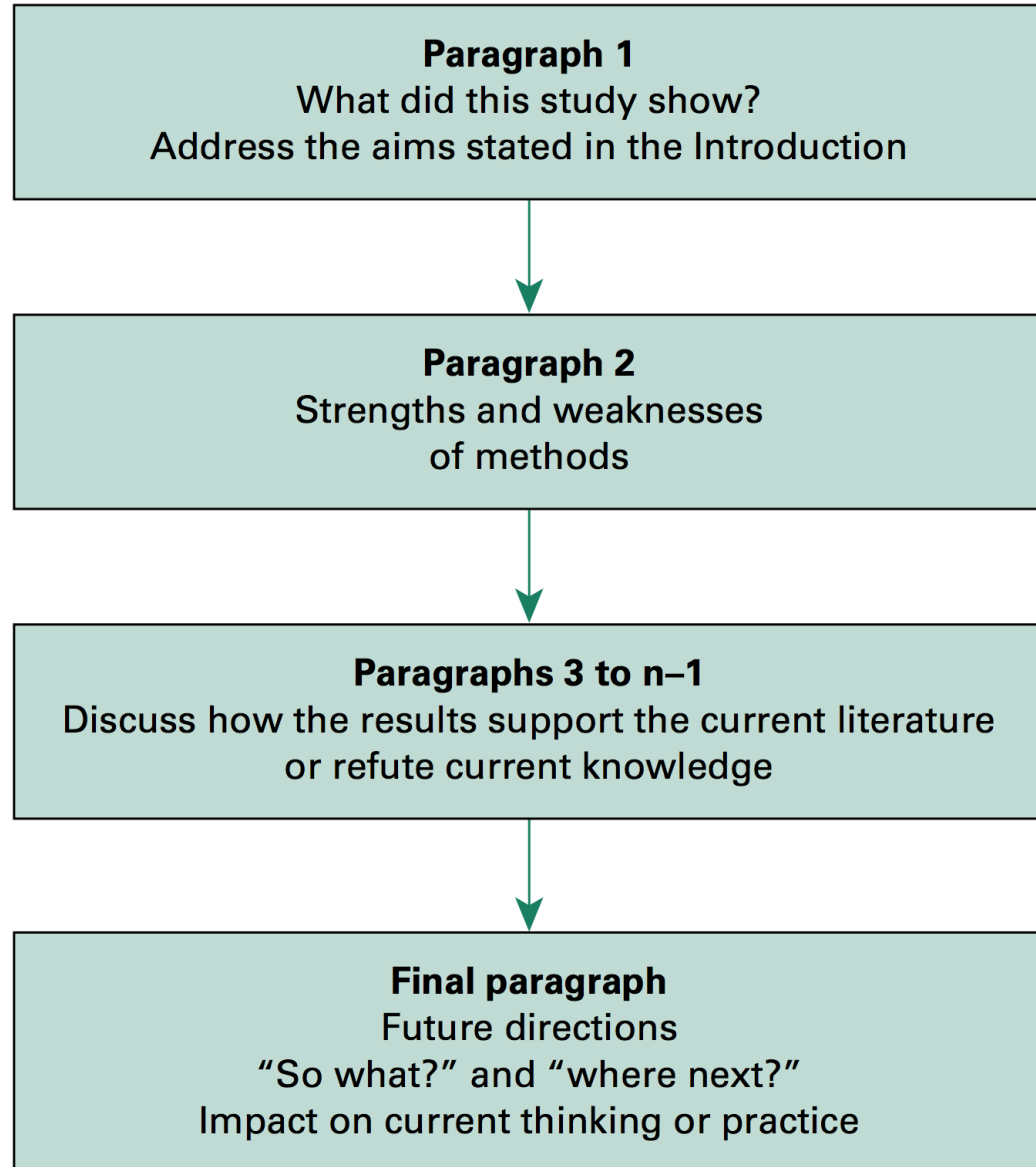
First table should be the
baseline characteristics

- We might use the key findings to present the background characteristics
- Next should be the figure or table showing the primary outcome

Results

- Tables and figures talk about themselves
- Just present in two lines the key findings
- No need to repeat the background information
- Regression analysis: just shown table for the statistically significant predictors
- If none is significant: just write few lines that no statistically significant predictor was identified through regression analysis

Discussion



We might keep
the limitations
before the final
paragraph

The Discussion Section

- 1st paragraph: answer question/hypothesis
- Remainder:
 - Evidence pro and con: literature review
 - Strengths/limitations of your study
 - Implications of findings (be conservative)
 - Other findings of your study
- Last Paragraph: conclusion

Discussion

- Good phrases to begin:
 - “The results from this study showed that...”
 - “Our results indicate that....”
 - “*The purpose of this study was to...and we...etc*”
- Be bold, explain precisely what you have found and explain how it will add to current knowledge or change healthcare
- Second paragraph address the strengths and limitations
- Third paragraph should put the research in context of what is already known in the field

Sample first paragraph

- To the best of our knowledge, this is the largest study from the Middle East and one of the largest prospective studies worldwide showing the serotypes of *Streptococcus pneumoniae* using molecular techniques through quantitative polymerase chain reactions (qPCRs) and the classical culture-based Quellung reaction. This study revealed the urgency for the introduction of PCV vaccinations in Jordan, utilizing vaccines with a broader serotype coverage, such as PCV-15 and PCV-20. PCV-13 provides a good coverage for the currently prevalent serotypes in Jordan (61.87%), while PCV-10 has limited use locally based on this study outcome, with a coverage rate of only 45.32% of identified serotypes.
- This project is the first quantitative study to assess the quality of life and psychological well-being for intermediate breast cancer survivors in Jordan. The majority of our study participants reported a good to high overall health, while only 5% of them reported that they had a low overall health.

Discussion

- Then we need to go through the results for comparing them with previous studies and justifying the findings
- Emotional functioning had the lowest mean score (58.98 ± 33.5 SD) within the functional scales for the QLQ-C30; 21.2% of participants reported problems in
- domain. This score is close to scores reported in Kuwait (Alawadi and Ohaeri, 2009), but slightly lower than scores reported in Bahrain (Jassim and Whitford, 2013) and Germany (Waldmann et al., 2007). The remaining scores of QLQ-C30 functional scales were also lower than those reported in Western countries (Hopwood et al., 2007; Waldmann et al., 2007). The physical functioning mean score in this study was 69.6 ± 26.1 SD, which is lower than that reported in Bahrain (mean= 74.9 ± 21.7 SD) (Jassim and Whitford, 2013) and much lower than reported from Germany (mean= 93.2 ± 6.8 SD) (Waldmann et al., 2007).

Discuss key findings in the results

- Leisure and imitation were the most common reasons reported for cigarette or hookah smoking. Results from Kuwait show that relief from boredom, relaxation and concentration at work were the most commonly reported reasons for smoking [14]; the most commonly reported reasons from Saudi Arabia were psychological relief and boredom [12]. Studies have shown that boredom can lead to serious problems (e.g. Internet, smoking or drug addictions). But, leisure is also regarded as an important way for people to maintain and improve their health. Leisure reduces one's own stress and help others to cope with stress [23]. Future health promotion in Jordan and the region targeting smoking cessation should also include advice for people on more beneficial use of their time, especially how they can fill their leisure time doing something meaningful for themselves and their communities.

Conclusion

- Try to avoid concluding that “further research is needed”
- Think about how your research could change the way medicine is practiced and what this could mean for patients and health systems.
- A good paper has answers the question it set out to study and has a clear message of how this adds to what is known

Conclusion

- Scientific writing is a skill that we all have to learn
- A structured approach and being clear about your main message is the key
- Always use simple and non- emotive language, however keep your writing interesting and emphasise the bigger picture
- Every one gets rejected
- Keep trying!

Samples for conclusion

- conclusions and recommendations:
- we would like to stress the following points: Breast cancer patients in Jordan have good quality of life scores when compared with patients from Western countries. However, their mental aspects are more impaired. Around half of the patients scored average to high scores on the HADS indicating a high rate of psychological impairments. Attention should be given to the unjustified high positive surgical margin detected in this study and the incomplete axillary lymph nodes removal. There is an urgent need for psychosocial support programs and psychological screening and consultations for patients diagnosed with breast cancer at the Ministry of Health hospitals. Social services could consider finding solutions for employment and financial constraints of breast cancer survivors.
- In conclusion, we recommend that the PCV vaccine should be immediately introduced in Jordan to control the growing burden of *Streptococcus pneumoniae*. PCV-20 and PCV-15 are the recommended vaccines of choice, followed by PCV-13. Developing countries need to depend on molecular techniques in identifying the burden of different infections and to avoid underestimating this burden when relying on culture results. This is a major issue in developing countries, particularly in the presence of antibiotics' misuse. Finally, countries need to depend on local data in their NIP evaluation and updating due to variations between countries and regions in the burden of different infections and in the prevalence of different serotypes of the causative organism.

The abstract

- Only convey the most interesting and important parts of your work
- Most journals require you structure the abstract
- Limit to 250 words (MEDLINE limit)
- Results are supported by data and p values
- Interpretation of findings is clearly stated in the conclusion

A brief synopsis of writing an abstract

- It's a minipaper:
 - Introduction (usually 1-2 sentences)
 - Methods (often longest part)
 - Results
 - Discussion/conclusion is limited to concluding statement

Prevalence of Adult Thyroid Dysfunction Disorders in Jordan

, Abstract

Background: Insufficient production of thyroid hormones results in hypothyroidism, while overproduction results in hyperthyroidism. These are common adult disorders, with hypothyroidism more common in the elderly. Jordan has had past problems with dietary iodine deficiency but there are no published studies assessing the population prevalence of these disorders in the Arab Middle East.

Methods: A cross-sectional study was conducted in three representative areas of Jordan. There were 7085 participants with a mean age of 40.8 years. Participants completed a questionnaire and had blood taken for thyroid analysis.

Results:*Hypothyroidism:* The prevalence of any hypothyroidism (already diagnosed and/or identified by blood testing) was 17.2% in females and 9.1% in males. Undiagnosed prevalence was 8% and 6.2% for females and males, respectively. The prevalence of subclinical hypothyroidism, defined as high serum thyrotropin (TSH) and normal serum-free thyroxine (fT4), was 5.98% among females and 4.40% among males. The prevalence of overt hypothyroidism, defined as high TSH and low fT4, was 2.00% among females and 1.80% among males. Only 53.5% (55.3% for females, 42.1% males) of those previously diagnosed with hypothyroidism had TSH levels within the appropriate range. *Hyperthyroidism:* The prevalence of any hyperthyroidism (already diagnosed and/or identified by blood testing) was 1.8% in females and 2.27% in males. The undiagnosed prevalence was 1.4% and 2.1% for females and males, respectively. The prevalence of subclinical hyperthyroidism (low TSH and normal fT4) was 1.20% and 1.80% among males and females accordingly. The prevalence of overt hyperthyroidism (low TSH and high fT4) was 0.2% among females and 0.3% among males. About 85.7% (83.3% for females, 100% males) of those previously diagnosed with hyperthyroidism had TSH levels within the appropriate range.

Conclusions: The results of this study reveal that the total prevalence of thyroid dysfunction among adult females and males in Jordan is very high compared with international statistics, particularly in the rates of undiagnosed cases. This indicates the need for further assessment of the value of screening for adult hypothyroidism in Jordan.

- **Abstract:** Introduction: *Streptococcus pneumoniae* infections are a major cause of mortality and morbidity worldwide. In Jordan, pneumococcal conjugate vaccines (PCVs) are not included in the national vaccination program. Due to the current availability of several PCVs, including PCV-10, PCV-13, and PCV-15, along with PCV-20, currently undergoing pediatric approvals globally, the decision to introduce PCVs and their selection should be based on valid local data on the common serotypes of *Streptococcus pneumoniae*. Methods: This cross-sectional study aimed to identify the frequency of serotypes of *Streptococcus pneumoniae* in children aged below 5 years hospitalized with invasive pneumococcal diseases (IPDs), including pneumonia, septicemia, and meningitis, during the study's duration in representative areas of Jordan. Serotyping for culture-positive cases was based on the capsular reaction test, known as the Quellung reaction. qPCR was conducted on the blood samples of patients with lobar pneumonia identified via X-ray or on cerebrospinal fluid for those with a positive latex agglutination test for *Streptococcus pneumoniae*. Results: This study was based on the analysis of the serotypes of 1015 *Streptococcus pneumoniae* cases among children younger than the age of 5: 1006 cases with pneumonia, 6 cases with meningitis, and 3 cases with septicemia. Only 23 culture-positive cases were identified in comparison to 992 lobar pneumonia cases, which were PCR-positive but culture-negative, with a PCR positivity rate of 92%. Serotypes 6B, 6A, 14, and 19F were the most common serotypes identified in this study, with prevalence rates of 16.45%, 13.60%, 12.12%, and 8.18%, respectively. PCV-10, PCV-13, PCV-15, and PCV-20 coverage rates were 45.32%, 61.87%, 64.14%, and 68.47%, respectively. Discussion: To the best of our knowledge, this is the largest prospective study from the Middle East and one of the largest studies worldwide showing the serotypes of *Streptococcus pneumoniae*. It reveals the urgency for the introduction of a PCV vaccination in Jordan, utilizing recently developed vaccines with a broader serotype coverage.
- **Keywords:** *Streptococcus pneumoniae*; serotype; Jordan; invasive pneumococcal disease; pediatrics

Getting the Reviews of Your Paper

- “The reviewer is always right.” (whether they are or not!)
- Don’t respond quickly. Digest reviews.
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