Scientific Writing

BY:

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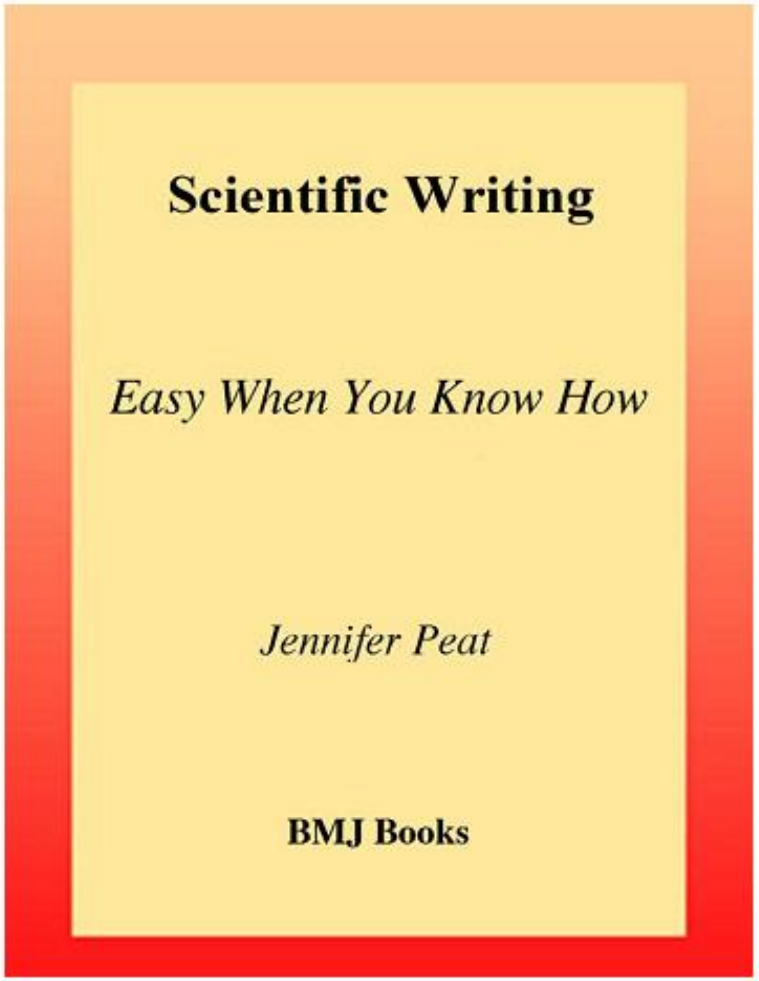
Reference


Scientific Writing
Easy When You Know How
Jennifer Peat
BMJ Books

Introduction section

Your reader is as busy as we are

Give your readers what you would like other writers to give you.

Introduction

- **The introduction is where readers like to find the information that tells them exactly why you did the study**

✓ *Background/Rationale*

✓ *Leads the reader to the research question and present that question*

✓ *Prepares the reader for the rest of the article*

What is Known & What is Unknown

Template for the Introduction.

Paragraph 1:

What we know

Paragraph 2:

What we don't know

Paragraph 3:

Why we did this study

Example of introduction

Introduction

People who are overweight or obese are at increased risk of developing many illnesses including hypertension, cardiovascular disease, and non-insulin dependent diabetes. However, many adults continue to be overweight. In 1995, results from the National Nutrition Survey in Australia suggested that 63% of men and 47% of women were either overweight or obese.

Despite the impact of excess body weight on health, self-perception of body mass in the general population has not been properly investigated. The only information comes from small, unrepresentative samples of women, particularly younger women, or from national studies in which self-reported weights may be unreliable. Until reliable information of self-perceptions of body mass is collected, it is difficult to design effective weight loss intervention strategies.

In 1998, we conducted a large cross-sectional survey of adults in which we accurately measured height and weight. In this paper, we report information about adults' perceptions of their own body mass.

Risk of Neuropsychiatric Disorders in Offspring Exposed to Maternal Polycystic Ovary Syndrome (PCOS): A Comprehensive Systematic Review and Meta-analysis

Introduction

Polycystic ovary syndrome (PCOS) is the most common endocrine disorder among women of reproductive age, (1) characterized by the hyper-androgenemia, chronic anovulation, and /or polycystic ovaries (2, 3). In addition to its well-recognized reproductive and metabolic sequelae, PCOS has also been associated with increased psychiatric morbidity in affected women (4, 5).

Given the fact that the fetal brain development is influenced by maternal hormonal milieu (6) growing studies have been conducted to examine the extent to which offspring exposed to maternal PCOS are at a higher risk of neuropsychiatric disorders.

To our knowledge, no systematic review or meta-analysis study has been published on the association between the maternal PCOS and anxiety and tic disorders in the offspring. Previous systematic reviews and/or meta-analyses on the association of maternal PCOS with autism spectrum disorders (ASD) (7, 8) and Attention deficit hyperactivity disorder (ADHD) (18) in offspring suffer from some serious methodological limitations, such as pooling 'unadjusted' ORs rather than 'adjusted' ORs (7, 9), including non-eligible studies and double counting (10-12), leading to a biased estimate of effect size. In addition, a number of large cohort studies have been published since these review studies (13-17).

Therefore, this comprehensive systematic review and meta-analysis aimed to summarize findings from all available studies on the association between maternal PCOS and the development of common major psychiatric disorders in offspring, including ASD, ADHD, anxiety, and Tic disorders.

Factors associated with the poor outcomes in diabetic patients with COVID-19

Introduction

The coronavirus 2019 disease (COVID-19) has become to a serious global public health challenge. So far, more than 5.3 million new cases and 342 thousand deaths of COVID-19 has reported worldwide [1]; the pandemic continues to expand despite intensive global preventive efforts. As with previous viral pandemics, [2] patients with underlying conditions are supposed to experience higher rates of COVID-19 related morbidity and mortality [3,4,5].

Diabetes mellitus (DM) is one of the most common underlying conditions found among patients with COVID-19 [6, 7]. Besides, the presence of DM has been associated with a higher risk of poor outcome in these patients [8,9,10]. However, up to our knowledge, a few previous studies intended to identify patients' factors on initial presentation that could predict poor outcome in diabetic patients with COVID-19 [11].

Hence, the present study has attempted to ascertain factors associated with poor outcome in hospitalized diabetic patients with COVID-19.

Cardiac Magnetic Resonance Findings in 1,072 Recovered COVID-19 Adult Patients: A Comprehensive Systematic Review

Coronavirus Disease 2019 (COVID-19), caused by the novel Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV2), has affected over 146 million people until now, of whom about 84.6 million have recovered.[1]

Manifestations of cardiac involvement have been noted in a significant number of patients with SARS-CoV-2 infection in the acute phase.[2-4] Consistent with other viral diseases,[5, 6] there are increasing concerns that some of these cardiac sequels may persist beyond the acute phase of the disease into several weeks and months of recovery in survivors. Also, it has been assumed that some survivors may develop cardiac complications due to persistent inflammation in the convalescent period.[7] If untreated, the sustained cardiac injury, especially myocarditis and fibrosis, could have severe consequences such as malignant arrhythmia, heart failure, and sudden cardiac death.[8, 9]

Given the high prevalence of the infection and the potential poor prognostic of these complications in the absence of timely management, it is crucial to identify the extent to which survivors may be affected. Hence, recent studies have assessed the presence of cardiac involvement using cardiac magnetic resonance (CMR) imaging, a non-invasive diagnostic tool, in patients infected by SARS-CoV-2 after recovery.[10-25]

To our best knowledge, there is no published systematic review of CMR studies focusing on recovered patients of COVID-19. In the systematic review of Ojha et al. [26], all except four selected articles were case reports on patients in the acute phase of the COVID-19. In this systematic review, we aimed to summarize main CMR findings in recovered COVID-19 adult patients reported in all available case series and cohort studies.

Title: Psychological problems and reduced health-related quality of life in Survivors of COVID-19: a systematic review and meta-analysis

Introduction

SARS-CoV-2 is the third member of corona virus family, with the less fatality but more transmissibility and infectivity compared to other family members.(Pal, Berhanu et al. 2020) It has infected over 106 million people worldwide, of which over 59 million have survived by 7 February 2021.(Asghari, Naseri et al. 2020, 2021)

Given the prior experience with coronavirus outbreaks,(O'Sullivan 2021) it has been supposed that COVID-19 survivors may not fully recover and some of them are supposed to be affected by long term sequels; psychological problems, such as post trauma stress disorder (PTSD), depression and anxiety, and reduced quality of life are probably among the key health issues facing survivors. (Ahmed, Patel et al. 2020, Raghu and Wilson 2020, O'Sullivan 2021)

With the purpose of identifying and addressing the clinical needs of COVID-19 survivors to rehabilitation and mental health services, follow-up studies have measured psychological distress and quality of life among COVID-19 survivors. Still, to our best knowledge, no systematic review study has been conducted in this regard.

Thus, this review aimed to summarize available evidence on the quality-of-life impacts of COVID-19 and prevalence of psychiatric problems, including PTSD, depression and anxiety, among survivors.

In brief...

- ✓ Tells the reader what is known
- ✓ States a specific “unknown” that is crucial to solving the problem
- ✓ Tells the reader how we can help to solve the problem
- ✓ States the purpose of your research
- ✓ Leads the reader to your specific research question
- ✓ Tells the reader briefly how you answered your research question, allowing readers to skip over the Methods section

Objectives

- State objectives or any pre-specified hypotheses.
- **Example**
  - *We aimed to estimate …*
  - *Our objective was determine…*
  - *Our purpose was specify …*

Investigation is never a purpose
Empty word

- Be **direct and state** a creditable ques n **without empty words.**

The aim of this study was to investigate the meteorological factors that correlate significantly with subsequent malaria epidemics in Ethiopia.

A word about Research Questions

- Formulating a clear and concise research question
  - Do not afraid of writing your research question as **a question**

"The purpose of this study was to answer the following question. ***What retrospective meteorological factors correlate significantly with subsequent malaria epidemics in Ethiopia?"***

- ✓ Express your research question in terms of the variables that you investigated.
- So, what are the independent and dependent variables in the example above?

A word about Research Questions

– State a **hypothesis** that you test

We hypothesized that XXX, an essential regulator of inflammation, provides a link between the neurological system and the inflammatory process in the inflamed joints in mice.

Things to avoid in the introduction

- ✓ Do not put the “text book knowledge”

  “Asthma is a condition in which the airways narrow in response to commonly occurring environmental stimuli.”

- ✓ Reviewing the literature extensively

Things to avoid in the introduction

- Do not end the introduction section with a quick summary of your own results.

"We have undertaken a study to define the characteristics of children who become overweight. ***The results show that lack of*** *exercise is a key factor and provide evidence that there has been a significant increase in overweight boys and girls in the last 12 years."*

Things to avoid in the introduction

- ✓ quoting the literature but omitting to say what was found …

"Previous studies have reviewed injury rates in Australian Army and RAAF recruits undergoing basic training"

"A study by Johnson et al., reviewed the medical records of Navy recruits who were unable to complete basic training "

- ➢ **Quote the science … not the scientist**

you could write:

“Injury rates in Australian Army and RAAF recruits undergoing basic training were 12% per year in 1997 but were much higher at 47% in Navy recruits who were unable to complete basic training”

Use tenses correctly in the Introduction

- ✓ **What is known**

  in present simple tense

  Malaria is still the number one killer of all the infectious diseases. Most deaths…..

- ✓ **Past studies and their results**

  in past tense

  Schmidt et al. (1993) showed ….

Use tenses correctly in the Introduction

- ✓ **The research aim or purpose**

  in past tense

  The purpose of this study was to answer the following question.

- ✓ **The research question**

  in present tense

  What retrospective meteorological factors correlate….

Discussion

- Key Result
- Interpretation
- Comparison
- Limitation
- Generalizability
- Implication

Key result:

- A short summary of the main findings of the study related to the objective.

Example:

Discussion

This systematic review and meta-analysis showed that maternal PCOS was associated with a diagnosis of ASD, ADHD, anxiety, and tic disorders in the offspring. For all assessed neuropsychiatric disorders, this association was slightly stronger in girls than in boys.

Key result:

- Good phrases to begin with are:
- *The results from this study showed that …; Our results indicate that …; etc.*
- You can restate the aim in more general terms, but do not be tempted to restate the results exactly as in the results section.
- *The purpose of this study was to … and we found that …,*

Comparison

- Comparing the results with relevant findings from similar studies .
- *Do not be tempted to discuss all the journal articles in every remotely related field.*
- In this, it is best to confine yourself to discussing the work in your field that is **highly relevant and reputable**.

Comparison

- **If your results are different from others, explain why your results are valid**

- **Discussing unexpected results**

  - ✓Relate them to the results of others – why you found them.
  - ✓Relate them to the theory

Comparison

Example :

Our findings that mothers with PCOS had higher odds of having a child with ASD than others which were in agreement with the results of two previous systematic reviews conducted by Katsigianni et al.(7) in 2019 and May et al.(8) in 2021. Compared to our study, Katsigianni et al.'s study reported a slightly stronger association (pooled OR: 1.66 [95% CI: 1.51, 1.83, $p < 0.001$, 7 studies), partly due to pooling unadjusted odds ratios instead of adjusted estimates.(7)

.....

Interpretation/Mechanisms

- **Give a reasonable and scientific interpretation of the main findings.**
- ***Say what your findings mean, not what you would like them to mean or think they ought to mean.***

The underlying mechanism linking maternal PCOS to neuropsychiatric disorders in offspring is still unknown. Among proposed mechanisms, excess prenatal androgen exposure is supposed to play a key role.

As many pregnant women with PCOS have increased circulating androgen levels and a greater placental androgenic capacity, their developing fetus is probably exposed to excess prenatal androgen levels. (29-31) Based on the organizational-activational hypothesis, steroid hormones permanently organize the fetal nervous system during 8-24 weeks of gestation age(32, 33). Fetal exposure to elevated androgens during this critical period could increase the risk of neurodevelopmental disorders in offspring mediated via alterations to dendritic morphology, neuronal density, and/or synapse function.(34-37)

Limitations/ strengths

- Discuss limitations/strengths of the study
- Taking into account sources of potential bias or imprecision .
- Honesty is the best policy here.

Example

Limitations and Strengths

Our systematic review and meta-analysis had few limitations. Included studies were few in number, especially on anxiety and tic disorder. In addition, they were registry-based and hence, may suffer from referral bias that limits the generalizability of their findings. Finally, researchers in each study considered a different list of potential confounder variables.

However, our study is the first systematic review and meta-analysis assessing the adjusted association between maternal PCOS and four common psychiatric disorders in offspring. In the included studies, diagnosis of exposure and outcomes were based on clinical diagnosis rather than rating scales.

Generalizability

- Discuss the generalizability (external validity) of the study results.

Example:

"Our study encompassed all different age groups and thus the result of this meta -analysis can be generalized to the general population."

- never generalize your results beyond the bounds of the type of participants included in your study, and ***never draw unjustified conclusions.***

Conclusion

- the conclusions must answer the aims set out in the introduction.

- the conclusions must be justified and logical

Example ,conclusion

Conclusion

In conclusion, this study suggested that children born to mothers with PCOS are probably at an increased risk of neurodevelopmental and psychiatric disorders, including ASD, ADHD, anxiety, and tic disorder. Its effect size might be slightly stronger in female offspring than in male offspring. Based on the present evidence, the association between the maternal PCOS and neuropsychiatric disorders in offspring is probably independent of, but strengthened with, obesity and other PCOS–related factors. However, well-characterized prospective cohort studies are needed to confirm the present evidence that mainly comes from retrospective /register-based studies.

Conclusion

- do not be too tentative if you found a strong association between the exposure and outcomes that you were investigating.

Our results suggest that vitamin consumption could be associated with a decreased risk of respiratory illness, has two hesitant parts: suggest and could be associated

Conclusion

is

show

Our results suggest that vitamin consumption could be associated with a decreased risk of respiratory illness, has two hesitant parts: suggest and could be associated

Avoid…

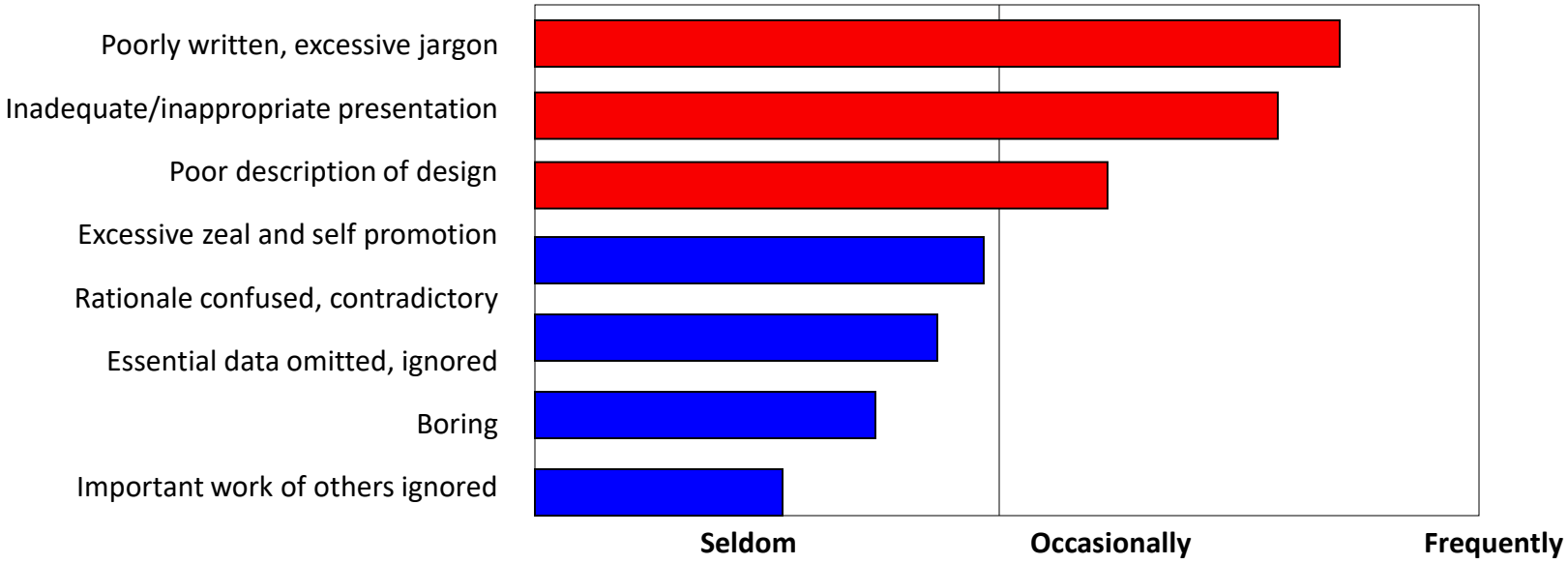
- Never finish a discussion with, ***Further studies are needed*** … *or* ***We are now investigating whether*** ….

The purpose of writing a paper is to show what you have found and what it means and *not to suggest what work you or other researchers might undertake in the future*.

- ***Avoid promises of things you may do in future***

- ***This will be reported in a forthcoming paper.***
- ***A further study of ….. Is in progress and will be reported.***
- ***Further work is in hand.***

Editors' reports of manuscript problems



Byrne DW, Publishing Medical Research Papers, Williams and Wilkins, 1998