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Prevalence, characteristics and management of headache experienced by people with schizophrenia and schizoaffective disorder: a cross sectional cohort study

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Objective: Headache is the most common type of pain reported by people with schizophrenia. This study aimed to establish prevalence, characteristics and management of these headache.

Method: One-hundred participants with schizophrenia/schizoaffective disorder completed a reliable and valid headache questionnaire. Two clinicians independently classified each headache as migraine (MH), tension-type (TTH), cervicogenic (CGH) or other (OH).

Results: The twelve-month prevalence of headache (57%) was higher than the general population (46%) with no evidence of a relationship between psychiatric clinical characteristics and presence of headache. Prevalence of CGH (5%) and MH (18%) was comparable to the general population. TTH (16%) had a lower prevalence and 19% of participant's experienced OH. No-one with MH was prescribed migraine specific medication, no-one with CGH and TTH received best-practice treatment

Conclusion: Headache is a common complaint in people with schizophrenia/schizoaffective disorder with most fitting recognised diagnostic criteria for which effective interventions are available. No-one in this sample was receiving best-practice care for their headache.

Despite evidence that people with schizophrenia demonstrate blunted responses to nociception¹⁻³, persistent pain is a common comorbidity⁴. Headache is the most common pain problem reported, with 12 month prevalence of around 50%⁵⁻⁷. Successful management of headache requires understanding of the mechanisms underpinning the headache experience. To facilitate this process, the International Headache Society has published the International Classification of Headache Disorders (ICHD) describing the important clinical features differentiating headache disorders. To our knowledge there has been no attempt to characterize headache types experienced by people with schizophrenia and schizoaffective disorder and map if care provided is appropriate. The purpose of this research was to determine prevalence, characteristics and management of common headache types experienced by people with schizophrenia/schizoaffective disorder. This information may help identify whether changes could be implemented to better address this manageable physical co-morbidity amongst this population.

1.0 Methods

1.1 Ethic Statement. All participants gave written informed consent. Ethical approval was provided through the institutional Human Research Ethics Committee. All procedures conformed to the Declaration of Helsinki.

1.2 Study participants. One hundred adult participants with a medical diagnosis, made by their treating psychiatrist, of schizophrenia/schizoaffective disorder were recruited from a Metropolitan Mental Health service outpatient depot clinic and open wards between July-November 2013. People attended the depot clinic for medication on a regular basis and provided a platform to recruit community/outpatient participants. People were excluded if in a locked ward as they did not meet selection criteria due to the acuity of their illness being

either cognitively impaired, in a critical phase of recovery which may have been destabilised by participation in the interview process. Any person deemed by their case manager to pose a safety risk to the interviewer was excluded.

Procedure. A previously validated headache questionnaire was identified⁸ and on advice from two independent mental health practitioners the word ‘aura’ associated with MH was replaced by the word ‘symptoms’. An algorithm was developed using ICHD criteria to classify headache into either Cervicogenic (CGH), Tension Type (TTH) or Migraine (MH) as well as Other Headache type (OH) when characteristics did not allow clear classification. Pilot testing on a non-psychiatric headache population demonstrated excellent agreement between raters when using the questionnaire and algorithm to classify headache type (weighted- $\kappa=0.83$, 95% CI 0.65-1.00).

Potential participants were identified, approached by one of the researchers (JC) and given detailed information regarding the project. Willing participants signed a consent form and were enrolled into the study. Basic demographic and clinical data were collected. The headache questionnaire was read to participants and responses recorded. Then two researchers used the questionnaire information to independently classify each participant’s headache against the algorithm.

1.3 Data Processing. Monthly Index of Medical Speciality (MIMS) searches were conducted on all medication with each classified into headache as a rare/uncommon or common/very common side effect. In every instance the highest rating of headache side effect of any of the drugs being taken by that participant was considered.

1.4 Data Analysis. Descriptive statistics were used to report participants’ demographic, and clinical characteristics. The twelve-month prevalence rate for headache was calculated. A series of univariate logistic regressions were conducted to determine if age, gender, BMI,

inpatient/outpatient status, length of mental illness or medication impacted on the likelihood of experiencing headache. Two researchers independently classified headaches. Responses were compared and inter-rater agreement assessed using a Kappa Measure of Agreement. Disagreements were discussed and consensus reached on classification. Overall prevalence rates for each headache type were calculated.

Management of an individual's headache was identified from the questionnaire and reviewed against the best practice management suggested for that person's specific headache type.

2.0 Results.

We consecutively screened 148 people identified by their case manager as suitable and 48 declined (Figure 1). One-hundred participants enrolled and completed the questionnaire.

Table 1 lists participants' demographic, clinical and medication details.

The twelve-month prevalence of headache was 57% (57/100). No relationship was found between demographic variables and presence of headache, with no significant association between gender (OR 1.07, 95% CI 0.47-2.47, $p=.87$), age (OR 0.99, 95% CI 0.94-1.02, $p=.25$) and BMI (OR 1.02, 95% CI 0.96-1.08, $p=.58$) and presence of headache. We found no relationship between the measured psychiatric variables and presence of headache (Table 1) with no significant association between length of time from diagnosis of mental illness and presence of headache (OR 0.99, 95% CI 0.95-1.03, $p=.61$) nor inpatient/outpatient status (OR 2.07, 95% CI 0.92-4.68 $p=.08$). Taking medication with headache as a common/very common side effect was not significantly related to headache status (OR 0.94, 95% CI 0.40-2.19, $p=.89$).

The two raters demonstrated good agreement on headache classification agreeing on 47/58 (weighted- $\kappa=0.74$, 95% CI 0.59-0.88). In all 67% (39/58) of reported headaches could be classified as distinct headache types against ICHD diagnostic criteria with 18/58 MH, 16/58

TTH and 5/58 CGH. The prevalence of specific headache type was 17.8% (18/101) MH, 15.8% (16/101) TTH, 4.95% (5/101) CGH and 18.8% (19/101) OH.

No participant with MH was prescribed migraine specific medication though 89% (n=16) were taking over-the-counter pain medication. The most commonly reported treatment for TTH was over-the-counter pain medication (75%, n=12). No-one with TTH received physical-therapy treatment such as manual therapy, exercise, education and postural correction for management of their headache. One participant with CGH received spinal manipulation only and none were provided with education, exercise or other active strategies.

3.0 Discussion

The aims of this study were to determine the prevalence, characteristics and management of headache in people with schizophrenia and schizoaffective disorder. Twelve-month prevalence of any headache was 57%, CGH 4.9%, MH 17.8%, TTH s 15.8% and OH 18.8%. The majority of MH (12/18) and TTH (12/16) sufferers treated themselves with over-the-counter paracetamol and/or sleep. No-one with TTH accessed physical-therapy services. One person with CGH received spinal manipulation but no active care.

Our data support Lake⁹ who argued that most headaches in this population are not a result of psychosis, rather represent a comorbid physical illness⁹. We found no relationship between presence of headache and duration of mental illness nor participants' inpatient/outpatient status. Furthermore, the majority of MH sufferers started experiencing MH prior to being diagnosed with mental illness. Prevalence rates of CGH and MH in this sample were comparable to the general population and TTH had lower prevalence¹⁰ further supporting the idea that headache is likely separate from the psychiatric condition.

TTH (15.8%) was lower in prevalence than the general population (45%) as determined by Jull using the same questionnaire and a similar algorithm⁸. It is hypothesised that TTH is the result of pain elicited by prolonged overloading on pericranial muscles combined with sensitisation of nociceptive pathways and abnormal pain processing in higher centres^{11,12}. Prevalence and intensity of responses to nociception in clinical pain is diminished in people with schizophrenia attributed to abnormal processing of motivational-affective aspects of pain due to dysfunction in the Inferior Prefrontal Cortex and Amygdala². People with schizophrenia appear to have reduced response to prolonged nociception¹³. It is plausible that the sensitisation process of the TTH experience in the non-psychiatric population is blunted in people with schizophrenia/schizoaffective disorder contributing to lower prevalence. Further investigation is needed to investigate this hypothesis as well as determine if physical impairments driving TTH are more severe in people with schizophrenia in order to provoke a response.

Best-practice treatment for symptoms of acute MH include administration of simple analgesics, non-steroidal anti-inflammatory drugs and antiemetic medication¹⁴. Triptans or ergotamine should be instigated if these measures are not effective on three occasions. To be deemed effective treatment should provide at least 2 hours of relief¹⁵. The mean length duration of MH was 9.8hrs (SD 20.3hrs) suggesting that the majority of MH sufferers (12/18) were not receiving optimal care. No participant reported a neurologist review for headache nor being prescribed triptans or ergotamine. The WHO recommend symptomatic relief should include all symptoms, yet no-one reporting vomiting or nausea took antiemetic medication. In this survey 11/18 people (61.1%) reported MH at least monthly and 7/18 (39%) at least twice per month suggesting their MH was insufficiently controlled and that prophylactic medication should have been implemented.

Medication and sleep were the most common treatments adopted for TTH. Pharmacological treatment for TTH is complex and many variables impact on which medications are the most appropriate¹². It was beyond the scope of this study to determine if participants took optimal medication for their TTH. Neck and shoulder exercise reduce frequency and intensity of TTH and education on ergonomics and posture can reduce the load on myofascial tissues^{16,17}. No-one experiencing TTH reported receiving physiotherapy, exercise prescription or ergonomics/postural review, suggesting that treatment to address headache issues was suboptimal.

A systematic review of randomised controlled trials determined a combination of cervical-mobilisation, manipulation and cervico-scapular muscles strengthening exercises is the most effective non-invasive management for CGH and should be the treatment of choice¹⁸. While one participant received cervical-manipulation it has been identified that manual therapy/manipulation without exercise prescription is a sub-standard treatment for CGH¹⁹. Physiotherapy must be more readily available and accessible to people in this population if they are to receive optimal treatment for headache.

The sample size calculation by a biostatistician was based on a prevalence rate for any headache, however, it is acknowledged that a larger sample size would have provided richer data about individual headache types. Participants were recruited from only one facility and while their demographic data correlated to that found in a national survey of this population it may have impacted on results. Recruiting community participants through the depot clinic may have impacted on the data. While participants were not limited to people on a Community Treatment Order it is unknown if the data would have been different if participants were recruited from all outpatient services.

One potential confounder in the presence of headache is the use of the antipsychotic Olanzapine which has been associated with reduction of headache²⁰. The impact of Olanzapine on presence of headache was not considered specifically in this study, however, 18.6% of people who did not experience headache were taking Olanzapine compared to 15.8% of people who did experience headache. It is not possible to determine if those people taking Olanzapine were protected from headache.

The data from our survey suggests that headache is common in people with schizophrenia/schizoaffective disorder and mechanisms behind most headaches are likely not a direct result of their mental health condition. Overall management of headache in this population is very poor. Very few people were receiving adequate, evidence-based treatment for their headache. Employment of health professionals, such as physiotherapists, with skills in headache diagnosis and management within mental health services may address this problem.

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