PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Examining the relationship between neighbourhood deprivation and mental health service use for immigrants in Ontario, Canada: A cross-sectional study
AUTHORS	Durbin, Anna; Moineddin, Rahim; Lin, Elizabeth; Steele, Leah; Glazier, Richard

VERSION 1 - REVIEW

REVIEWER	Dr. Domenico Giacco Unit for Social and Community Psychiatry, Barts and the London School of Medicine and Dentistry, Queen Mary University of London
REVIEW RETURNED	27-Oct-2014

GENERAL COMMENTS	This paper explores a relevant research question, i.e. what is the combined effect of deprivation and immigration status on mental health service use. I suggest that the following points should be clarified in order to more clearly define the research question: a) Why did the paper focus on non-psychotic disorders? There is no rationale described for excluding psychotic disorders from the analysis. Furthermore, that might have strongly influenced results on psychiatric care and hospital mental health care b) Why did the author include only the immigrants who had moved to Ontario from their country of birth and not those who had moved previously to other country? Rationale for this is not explained. At the very least, number of people excluded from this study for that reason should be provided. In the abstract: I understand that for each person included service use was followed up for five years. This should be added to the abstract, as it is crucial to understand the findings. The follow-up length should also be better clarified in the methods section. Minor comment: b) Page 8, line 9 I think the authors wanted to state that “short-term admissions were excluded because the classification information did NOT permit identification of non-psychotic disorders".

REVIEWER	Meryam Schouler-Ocak University Hospital of Charité, Psychiatry and Psychotherapy
REVIEW RETURNED	02-Dec-2014

GENERAL COMMENTS	Durbin et al. provide an interesting study on the relationship between immigrant status, material deprivation and service use for non-psychotic-psychiatric disorders. A large sample of N=501,417 matched pairs (immigrant vs. long-term resident) were examined for their psychiatric health care utilization over the period of 1999-2012. The authors found that living in deprived areas was associated with higher utilization of mental health services; however, the use of services was lower in immigrants compared to long-term residents. The study deals with a relevant and timely research question. Prior to publication, the following issues need to be addressed: 1. The introduction should provide more background information and more details on the rationale of the study. 2. The methods section is too long considering the length of the manuscript and should be shortened. 3. The study inclusion criteria are not clear: while in the rest of the manuscript it is referred to a period from 1999-2012, the "Study Populations" section (page 6 following) as well as the "Outcomes" section (page 7) refer to a period beginning in 1993. This should be clarified. Moreover, it is unclear why "having no recorded contact with the health care system during that time" is listed within the inclusion criteria. 4. What is the rationale of not including psychotic disorders? The authors should provide an explanation. Similarly, the exclusion of short-term inpatient admissions (page 8) is not explained in a clear way and should be clarified. 5. There are too many subheadings in the results section considering the total length and the length of each paragraph. Unnecessary headings should be removed.

VERSION 1 – AUTHOR RESPONSE

Reviewer Name Dr. Domenico Giacco
Institution and Country Unit for Social and Community Psychiatry, Barts and the London School of Medicine and Dentistry, Queen Mary University of London
Please state any competing interests or state 'None declared': None declared.

Please leave your comments for the authors below
This paper explores a relevant research question, i.e. what is the combined effect of deprivation and immigration status on mental health service use.

I suggest that the following points should be clarified in order to more clearly define the research question:

a) Why did the paper focus on non-psychotic disorders? There is no rationale described for excluding psychotic disorders from the analysis. Furthermore, that might have strongly influenced results on psychiatric care and hospital mental health care
Psychotic disorders were excluded since psychotic and non-psychotic disorders are so different (e.g., in etiology, symptom profile, acuity, common pathways to care, and prevalence) that we would have had to conduct stratified analyses. We also would likely have had to undertake a different analytic approach due to smaller sample sizes for service use for psychotic disorders due to much lower prevalence rates. Given these considerable differences, also examining psychotic disorders was beyond the scope of the current study but may be a focus of subsequent research.
We noted this in the limitations section: "Since this study exclusively examined service use for non-psychotic disorders, results cannot be extrapolated to psychotic disorders. Since psychotic and non-psychotic disorders are so different (e.g., in etiology, symptom profile, acuity, common pathways to

care, and prevalence), service use for psychotic disorders was beyond the scope of the current work, but may be investigated in future studies."

b) Why did the author include only the immigrants who had moved to Ontario from their country of birth and not those who had moved previously to other country? Rationale for this is not explained. At the very least, number of people excluded from this study for that reason should be provided. The percentage of immigrants excluded (13.3%) is now noted in the methods section. We also explain that persons who immigrated from a country other than their birth country were excluded since being exposed to multiple immigrations and resettlement experiences may contribute to them being different from recent newcomers who immigrated to Ontario from their birth country.

In the abstract: I understand that for each person included service use was followed up for five years. This should be added to the abstract, as it is crucial to understand the findings. The follow-up length should also be better clarified in the methods section. This change has been made in the abstract and the methods text. The primary and secondary outcome measures section in the abstract now reads, "For each immigrants and matched long term residents service use (contact with primary care, psychiatric care and hospital care (emergency department visits or inpatient admissions) for non-psychotic mental health disorders was followed for five years. Likelihood of use of each service was examined using conditional logistic regression models..."

Minor comment: b) Page 8, line 9 I think the authors wanted to state that "short-term admissions were excluded because the classification information did NOT permit identification of non-psychotic disorders". This change has been made.

Reviewer Name Meryam Schouler-Ocak
Institution and Country University Hospital of Charité, Psychiatry and Psychotherapy
Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

Durbin et al. provide an interesting study on the relationship between immigrant status, material deprivation and service use for non-psychotic-psychiatric disorders. A large sample of N=501,417 matched pairs (immigrant vs. long-term resident) were examined for their psychiatric health care utilization over the period of 1999-2012. The authors found that living in deprived areas was associated with higher utilization of mental health services; however, the use of services was lower in immigrants compared to long-term residents. The study deals with a relevant and timely research question. Prior to publication, the following issues need to be addressed:

1. The introduction should provide more background information and more details on the rationale of the study. We believe that we strengthened the rationale without dramatically increasing the word count by moving some material from the discussion to the introduction and by adding new material. Specifically, we provide more details on non-psychotic mental health disorders (e.g. estimates of the number of people affected worldwide), and by discussing the link between recent immigrants and disadvantage.
2. The methods section is too long considering the length of the manuscript and should be shortened. This section has been updated and shortened to remove unnecessary words and redundant information. We removed approximately 8% of the words, reducing the length of the section from about 1880 words to 1725 words.
3. The study inclusion criteria are not clear: while in the rest of the manuscript it is referred to a period from 1999-2012, the "Study Populations" section (page 6 following) as well as the "Outcomes" section (page 7) refer to a period beginning in 1993. This should be clarified. Thank you for pointing out this

error. We have updated all instances where we wrote 1993 so they now read 1999.
Moreover, it is unclear why “having no recorded contact with the health care system during that time” is listed within the inclusion criteria. We clarified this sentence to state that having at least 1 contact with health care system was required to be eligible for the study since it increases the likelihood that these individuals were living in Ontario for the 5-year follow up period.
4. What is the rationale of not including psychotic disorders? The authors should provide an explanation. Similarly, the exclusion of short-term inpatient admissions (page 8) is not explained in a clear way and should be clarified. We have now clarified the sentence to indicate that the available classification information for short-term admissions did not allow us to distinguish non-psychotic disorders from non-psychotic disorders.

Thank you for the opportunity to improve this paper and for considering it for publication in BMJ Open. We hope these changes are satisfactory and look forward to hearing back.

VERSION 2 – REVIEW

REVIEWER	Domenico Giacco Unit for Social and Community Psychiatry, Barts and the London School of Medicine and Dentistry, Queen Mary University of London.
REVIEW RETURNED	24-Jan-2015

GENERAL COMMENTS	The authors' response to my comments and the consequent revision of the paper are satisfactory. I suggest one further point should be clarified prior to publication: the authors state (page 11, sensitivity analyses) that "In the sensitivity analysis, these visits (hospital and ED admissions) were included only if a mental health diagnosis was the most responsible diagnosis." How did they ascertain that? Was this clearly indicated in the clinical administrative data they analysed and how was this reported in such data?

VERSION 2 – AUTHOR RESPONSE

Reviewer Name Domenico Giacco
Institution and Country Unit for Social and Community Psychiatry, Barts and the London School of Medicine and Dentistry, Queen Mary University of London.
Please state any competing interests or state ‘None declared’: None declared

Please leave your comments for the authors below
The authors' response to my comments and the consequent revision of the paper are satisfactory.

I suggest one further point should be clarified prior to publication: the authors state (page 11, sensitivity analyses) that "In the sensitivity analysis, these visits (hospital and ED admissions) were included only if a mental health diagnosis was the most responsible diagnosis."
How did they ascertain that? Was this clearly indicated in the clinical administrative data they analysed and how was this reported in such data?

Our response is below:
In the administrative data sets used to measure hospitalizations, the most responsible diagnosis for each visit was identified using International Classification of Disease (ICD) codes. For ED visits, up to

9 other contributing diagnoses can be reported, and for admissions up to 25 total diagnoses can be reported (also in ICD codes). The assignment of a diagnosis to a condition is meant to signify the impact that the condition had on the patient's care, as evidenced in the physician documentation. In the rare cases when the primary responsibility for care was designated to allied health care providers (e.g. midwife, nurse practitioner), the documentation of this primary care provider is used for diagnosis selection and determination of significance.
As recommended by the World Health Organization in their Rules and Guidelines for Mortality and Morbidity Coding" (2004) , the Most Responsible Diagnosis is the one diagnosis or condition that can be described as being most responsible for the patient's stay in hospital. If there is more than one such condition, the one held most responsible for the greatest portion of the length of stay or greatest use of resources (e.g. operating room time, investigative technology) is selected. In instances when no interventions were performed, the first-listed diagnosis is considered the most responsible diagnosis. Finally, if no definite diagnosis was made, the coding is based on the main symptom, abnormal finding or problem.

We updated the methods section to reflect this. On page 11 the text describing the sensitivity analysis now reads: "The most responsible diagnosis is determined from the primary care provider's documentation, and refers to the diagnosis or condition identified as being most responsible for the patient's stay in hospital, according to the World Health Organization's Rules and Guidelines for Mortality and Morbidity Coding."
The reference below is cited.

Thank you again for the opportunity to improve this paper, and for considering its publication in BMJ Open.