Article details: 2015-0029	
Title	A retrospective cohort study of the prescribing trends of nurse practitioners to older adults in Ontario: 2000 – 2010
Authors	Joan E. Tranmer RN PHD, Lindsey Colley, Dana S. Edge RN PhD, Kim Sears Elizabeth VanDenKerkhof RN DrPH, Linda Levesque BScPharm PhD
Reviewer 1	**Monique Caljouw**
Institution	Leiden University Medical Center, Public Health and Primary Care
General comments (author response in bold)	The article provides an overview of the trends and patterns in medication prescription to persons ≥ 65 years of age in Ontario, Canada, by nurse practitioners (NP) between 2000 and 2010. It is interesting to read that the prescribing behavior of NPs has increased and that there is no relation to population changes. Major Revisions Page 8, line 6, the authors state that there is a table 4. I cannot find this table 4? Possibly you have merged the tables in a new table 3 and added figure 2? Please explain this difference and rewrite the first sentence. **We have corrected this error. On page 8, we now refer to Table 3 and Figure 2.** In table 3 the top 10 medications in respectively 2000, 2005 and 2010 were given. While in the text (lines 9-31 on page 8) other results were presented than in the table. Why report in-between data and not the data as presented in table 3? Or give the percentages from figure 2 in the results for the in-between years. Figure 2 is now not mentioned in the results. This part of the results setting is confusing and needs rewriting. **Revised paragraph: Across the 10 years, NPs prescribing pattern changed. See Figure 2. Before 2006, NPs predominantly prescribed medications for acute conditions; by 2010 this trend was completely reversed, with the 10 most frequently dispensed medications being those to treat chronic conditions. In contrast, FPs consistently prescribed a higher proportion of medications for chronic conditions throughout the study period. As reported in Table 3, by 2010, 8 of the top 10 most frequently prescribed medications were the same for NPs and FPs. The only differences were that FPs prescribed serotonin inhibitors and benzodiazepines and NPs prescribed laxatives and bisphosphonates; NPs were not regulated to prescribe benzodiazepines during the study period. (Page 8)** Minor Revisions In the abstract, page 2, line 42, the abbreviation LHINs is used. Can you write this out, because without reading the article it is not clear for me where the abbreviation stands for. **Corrected** In the introduction section the authors mention two models for nurse prescribers. The independent nurse prescriber and the supplementary nurse prescriber. Which they clearly explain, but it is not supported with a reference. On page 3, line 16 they write: "While the defining…two models are generally described", can the authors give a reference? **Revised sentence: While the defining criteria for nurse prescribing practices vary, two models are generally described (1). (Page 3)** Further on in this section, line 41, two new terms are introduced: "autonomous Nurse Practitioner" (line 41) and RN-extended class (line 56). The introduction of these new terms is somewhat confusing. Are these NP's comparable with the independent nurse prescriber? Maybe you can make a bridge between the models and these new terms? Or explain them some more in the text? **We have revised this paragraph to only refer to the NP as an independent practitioner – and have not used the term autonomous. As well use of the term RN-extended class was removed as this is an Ontario specific regulatory change and not generalizable across other jurisdictions. (Page 3)** The methods section is clearly described. Only the categorization of the drugs used for both acute or chronic conditions is somewhat unclear, especially lines 26-31 on page 6. Does it mean that acetaminophen, NSAIs, PPIs and stool softeners in the older population always were used for ≥ 30 days? Or are there also older adults who used these medications for shorter periods (< 30 days)? **Revised paragraph: Drugs were categorized on the basis of their**

	pharmacologic and/or therapeutic class, as well as whether they were indicated for an acute (i.e., episodic treatment) or chronic (i.e., chronic treatment) conditions. The categorization of drugs used for both acute and chronic conditions (e.g., nonsteroidal anti-inflammatory drugs [NSAIDs]) was based on the proportion of prescriptions written for a short (<30 days) versus long (≥30 days) duration of use. Using this approach, acetaminophen, NSAIDs, proton pump inhibitors (PPIs), and stool softeners were categorized as chronic medications in this older adult population, since the vast majority of prescriptions were >= 30 days. (Page 6) The authors included NPs between 2000-2010. In the period 2008-2011 some laws have changed, so the NPs are allowed to prescribe more medication form 2008 onwards. It is unclear if the authors have looked if these law changes have also changed prescribing behaviour. Maybe they can discuss these changes a bit more, to better understand the results. **Revised sentence: With the regulatory change introduced in the Fall of 2011, and the discontinuation of a restrictive formulary list for NP prescribing practice, FP and NP prescribing patterns are likely to remain similar, but this would require further validation as the regulatory change is actually integrated into practice. (Page 10)** Page 9, line 49: Could you explain the abbreviation FHTs? **Completed.** Page 11, line 19: the authors mention the unique role of the NP with in the primary health care team. To understand this unique role, can you add some more information i.e. the specific tasks of a NP in this section? **Revised sentence: NPs are able to provide primary care based chronic care management strategies, such as behavioural counselling, support for self-management, medication titration, symptom assessment, to name a few. (Page 11)** Do you have some more information about the NP characteristics? Now only age is given. For example, gender, work experience, years practicing as NP, etc. If not, could this have influence the results? **These data were not available in the database.** <u>Figures and tables</u> Table 1: is the mean age at registration and age range from the newly registered NPs or from the total number registered NPs? Mean age for the newly registered NPs, as noted in column title. **Table 2: add in the title of the table that it are LHINs in Ontario.** **Corrected** Table 3 and Figure 2: In both GP is used instead of FP. Throughout the whole manuscript FP is used. Use unambiguous terminology in the text as well as in the tables and figures. **Consistently changed to FP**
Reviewer 2	Dr. Alexander Bischoff
Institution	Institute of Nursing Science, University of Basel
General comments (author response in bold)	Excellent paper! I only have minor remarks: p 3 – are independent nurses the same as autonomous nurses? **Note previous correction** p 3 – "additional education (for NP)": more specific information would be helpful, since it is all about prescribing NP. **Added pharmacological education** p 3 – [RN(EC)] : ? **Note previous correction** p 5 – "a cohort of FPs": for me, this study looks more like a case-control study, whereby physicians are the control groups **This was a cohort study that identified NPs in comparison to similar group of FP. As there was not a specific outcome of interest, this is not a case-control study.** P 8: "The proportion continued to increase to a high of 9 out of the top 10 in 2008 (and sustained thereafter)." – this sentence is difficult to understand (at least for me since

	English is not my mother tongue. **Note previous correction to this paragraph.** P 10: "While we can be reassured that our educational programs are graduating NPs" – sentence? **Revised sentence to enhance clarity** p 11: I would prefer an explicit paragraph on study limitations and strengths. **Revised: Strengths and limitations heading added.** P 12 In the conclusions you write: "However, the findings also show that, perhaps, NPs are not being optimally positioned in their practice (or within models of care) to best meet the population needs of the older person." Sounds interesting, but should be explored in the discussion section (Interpretation) and not only in the last two sentences. **Added the following sentence: NPs are able to provide primary care based chronic care management strategies, such as behavioural counselling, support for self-management, medication titration, symptom assessment, to name a few. (Page 12)**