**Title:** The prevalence of pain and analgesia use in the Australian population: Findings from the 2011-12 Australian National Health Survey

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**Keywords**

Opioid, analgesia, chronic pain, pain severity

**Key points:**

- Approximately 2.75 million (15.4%) Australians aged ≥15 years are estimated to have chronic and reoccurring pain (over a six-month period) based on the most comprehensive, nationally representative health survey conducted in Australia.
- Recent use of opioid analgesic medications was reported by 12.0% of males and 13.4% of females with chronic pain. Persons using opioid analgesia primarily reported moderate to very severe pain.

**Word count:** 3,592

# The prevalence of pain and analgesia use in the Australian population: Findings from the 2011-12 Australian National Health Survey


## Abstract

**Background:** Opioid analgesic use and associated adverse events have increased over the last 15 years, including in Australia. Whether this is associated with increased chronic pain prevalence in the Australian population is unknown. This study aimed to estimate: (1) prevalence of chronic pain and analgesia use in the Australian population by age and sex; (2) severity of pain in the population with chronic pain by sex; and (3) the distribution of recent pain severity in those using analgesia by age and sex.

**Methods:** This study used cross-sectional, nationally representative data collected by the Australian Bureau of Statistics 2011-12 National Health Survey. A total of n=20,426 participants were included with an overall response rate of 84.8%. Weighting procedures were applied to obtain population estimates, confidence intervals and when testing for statistical significance.

**Results:** The prevalence of chronic and reoccurring pain (over a six-month period) was 15.4% (2.75 million) for Australians aged ≥15 years. Prevalence increased with age for both sexes. Significantly more females reported moderate-to-very severe pain overall ($p < 0.001$), and within most age groups. Recent use of opioid analgesia was reported by 12.0% of males and 13.4% of females with chronic pain.

**Conclusion:** Chronic pain and opioid analgesic use are important public health issues in Australia. Study estimates of chronic pain and recent pain were no greater than earlier estimates. The acknowledged increase of opioid use in the literature thus appears consistent with changing treatment and/or prescribing patterns over time. Sex differences regarding pain prevalence, severity and opioid use were apparent.

## 1. Introduction

Effective management of chronic pain generally encompasses several treatment modalities incorporated within a multi-disciplinary framework [1]. Though efficacy has been debated, opioid analgesic medications have been increasingly prescribed for chronic pain over the last two decades [2]. During this time, numerous studies have identified an escalation in opioid analgesic medication use and associated adverse events, both in Australia and internationally [3-7]. Studies have also noted differences between the sexes in patterns of use, misuse and adverse events associated with opioid analgesic medications [8, 9], with a review by Darnall, Stacey and Chou (2012) recently expressing 'there is a major need for all opioid studies to examine data by sex' [9]. One reason is that, internationally, use of opioid analgesia in women of reproductive age has become an epidemic [10, 11] and if use is continued during pregnancy, this can adversely affect infant outcomes [10, 12]. Further, many studies have indicated that there is an increased frequency of chronic pain [13, 14] and specific chronic pain conditions in females [8, 9]. However, other studies have found no significant differences in the prevalence of chronic pain between males and females [15, 16].

In Australia and elsewhere opioid analgesia is generally indicated for pain that is considered moderate to severe [17-19]. Thus, in addition to pain of extended duration as reflected by chronic pain status, information on pain severity should also be assessed to ensure use is consistent with prescribing recommendations. As a counterpoint, equivalent data on non-opioid analgesia can provide further insight into the use of opioid analgesics in recent pain, by severity and in those with chronic pain. Whether the increased use of opioid analgesia in the Australian population is associated with a change in chronic pain prevalence over time, or is solely associated with other factors is currently unknown. Furthermore, an assessment of the appropriateness of opioid analgesia use in association with pain severity, given current prescribing recommendations, is also needed. Therefore, using the Australian National Health Survey (NHS) this study will (1) estimate current prevalence of chronic pain and analgesia use in the Australian population by and age and sex; (2) determine severity of

pain in the population with chronic pain by sex; and (3) assess the distribution of recent pain severity in those using analgesia, by age and sex.

## 2. Methods

### 2.1 Participants

This study used cross-sectional, nationally representative data collected by the Australian Bureau of Statistics (ABS) in the 2011-12 Australian NHS. The 2011-12 Australian NHS is the sixth of its kind conducted by the ABS since 1989, with the aim of establishing national benchmarks on many health related issues and health trends over time [20]. The sample consisted of persons of all ages living in private Australian residences, collected via stratified multistage sampling [20]. The sample design ensured that within each state of Australia, each person had an equal chance of selection. Survey information was obtained for one adult and one child aged 0-17 years (if applicable) in each participating household [20]. Face-to-face interviews were conducted by trained ABS interviewers in participants' homes between the periods of March 2011 to March 2012 [20]. The overall response rate was 84.8%, with a total of n=20,426 participants from 15,565 private residences [21].

Data are made available by the ABS in the form of a Confidentialised Unit Record File (CURF). The CURF contains detailed, individual participant data which has been collected by the ABS for the purposes of census and population surveys [12]. This data is made available at the discretion of the ABS on the condition that participant identity is not available to users of the CURF and participant confidentiality is always retained [12]. For this reason, not all data collected within a survey may be included in the CURF and there are restrictions on allowable analyses.

### 2.2 Data and analysis

Chronic pain was defined as self-reported pain which persisted or reoccurred over a six-month period. 'Bodily Pain' was defined as pain experienced within the previous four weeks and measured by severity of pain experienced on a scale from 'no pain' to 'very severe' pain. To reflect prescribing recommendations for opioid analgesic medications (treatment of moderate to very severe pain), pain severity was classified into four groups: no pain, very mild to mild pain, moderate to very severe pain and not applicable or unknown. As chronic

pain gives an indication of pain duration and bodily pain provides information on recent pain severity, use of both variables allowed investigation of the severity of chronic pain and whether opioid analgesia use was appropriately associated with pain severity given prescribing recommendations.

Participants were asked for the name or brand of all medication they had taken in the last two weeks and were requested to provide the packages of all recently used medications to the interviewer to assist in the recording process. Medications were classified using the World Health Organisation's Anatomical Therapeutic Chemical (ATC) system. To investigate associations between analgesia use and pain of all severities, both opioid and non-opioid analgesia use were analysed for this study. Opioid analgesia use included the use of any type of opioid analgesia over the previous two-week period. Non-opioid analgesia use included the use of any type of pharmaceutical non-opioid analgesic medications (e.g. paracetamol) and anti-migraine medications. The survey did not differentiate between prescribed or 'over the counter' analgesic medications within the opioid or non-opioid analgesia classifications.

Data specific to chronic pain was not available in the CURF and was provided directly from the ABS by special request. This data included Australian population totals (all ages) as well as specific analysis for participants aged ≥15 years. All other analyses were based on data extracted from the CURF. Data included individual participants' age, sex, bodily pain (severity), opioid analgesia use and non-opioid analgesia use. These data were analysed for participants aged ≥15 years (n=16,412, N=17,894,850), although detailed bodily pain data is only available for those aged ≥18 years (n=15,475, N=17,042,208).

Weighting procedures were applied using STATA v12 to calculate population estimates, associated confidence intervals and to test for statistical significance between proportions. The Jackknife delete-1 weighting method was used to account for the stratified multistage design of the survey, any oversampling and non-response. Differences in proportions of males and females were calculated in each age group for bodily pain (severity), opioid analgesia use and non-opioid analgesia use [9], with p-values of ≤0.05 considered a statistically significant difference. No adjustment was made for conducting multiple tests as per Rothman [22].

### 2.3 Ethics

The interview components of the NHS were conducted by the ABS under the *Census and Statistics Act 1905*. Statistical analysis of the chronic pain data was restricted and as a result was conducted directly by the Australian Bureau of Statistics (ABS) for the purposes of this study. All analyses of the CURF data were undertaken by AM and MB who are registered users of the NHS CURF.

## 3. Results

### 3.1 Chronic pain and analgesia use

Of the total Australian population (N=22,105,281), an estimated 12.7% (N=2.8 million) live with chronic or reoccurring pain, increasing to 15.4% (N=2.75 million) when those aged <15 years were excluded. Of males who were ≥15 years of age, 14.6% were living with chronic or reoccurring pain, and likewise for 16.1% of females.

The distribution of the Australian population aged ≥15 years living with chronic or reoccurring pain and the percentages using opioid analgesia by 10-year age groups by sex is illustrated in Figure 1. The prevalence of chronic or reoccurring pain generally increased with age for both males and females. Over 12% of females ≥85 years reported any opioid analgesia use in the two weeks prior to the survey. There was a trend towards higher opioid use in females than males in every age group.

Figure 1

The percentage of those reporting chronic or reoccurring pain *and* taking opioid analgesia are represented in Figure 2a. An estimated 12.0% of males and 13.4% of females with chronic or reoccurring pain aged ≥15 years had taken opioid analgesic medications in the previous two weeks, with the highest percentages of use seen in the youngest (17.0%) and oldest (29.0%) female age groups. The percentages of those reporting chronic or reoccurring pain and taking non-opioid analgesia are represented in Figure 2b. In those aged ≥15 years almost a quarter (23.1%) of males and over a quarter (29.2%) of females with chronic or reoccurring pain had taken non-opioid analgesic medications in the previous two weeks, with both males (57.6%) and females (63.9%) aged ≥85 years reporting the highest percentages of use.

Figure 2a and 2b

### 3.2 Pain severity in persons with chronic pain

The distribution of reported pain severity over the last four weeks in persons aged ≥18 years with chronic or reoccurring pain is shown in Table 1. Most males (63.8%) and females (72.2%) with chronic or recurring pain stated their pain was moderate to very severe over the four weeks prior to the survey.

Table 1

### 3.3 Recent pain severity in persons with bodily pain

Over two thirds (68.2%) of Australians aged ≥18 years (71.1% of females, 65.2% of males) reported experiencing pain of any severity over the four weeks prior to the survey, with26.6% reporting moderate to very severe pain, 41.5% very mild to mild pain, and 31.1% reporting no pain. Pain severity was not applicable or was unknown in the remaining 0.7%. One-fifth of those reporting some bodily pain also had chronic or recurring pain.

When broken down by sex, males were significantly more likely overall to report no pain ($p < 0.001$) or be in the not applicable/unknown category ($p < 0.001$), and females were significantly more likely to report moderate to very severe pain ($p = 0.001$). A detailed breakdown of pain severity by age group for both males and females is provided in Table 2.

Table 2

Statistically significant differences were also noted in pain severity experienced by males and females within most age ranges across the lifespan. A significantly higher percentage of females than males reported moderate to very severe pain within almost every age group except 65 to 74 years (15 to 24 years $p = 0.006$; 25 to 34 years $p = 0.008$; 35 to 44 years $p = 0.031$; 45 to 54 years $p = 0.023$; 55 to 64 years $p = 0.001$; 75 to 84 years $p < 0.001$). A

significantly higher percentage of males than females reported no pain within ages 45 to 54 years ($p = 0.002$), 55 to 64 years ($p < 0.001$) and 75 to 84 years ($p = 0.001$). A significantly higher percentage of males than females aged 65 to 74 years reported very mild to mild pain ($p = 0.004$).

### 3.4 Distribution of pain severity in persons using analgesia

Figures 3a and 3b illustrate the distribution of pain severity in males and females aged ≥15 years using opioid analgesia in the previous two weeks. In each age group, except males aged 15 to 24 years, most individuals using opioid analgesia reported moderate to very severe pain, followed by very mild to mild pain. However, in males aged 15 to 24 years the percentage reporting no pain and having used opioid analgesia in the previous two weeks (32.7%) was higher than those reporting very mild to mild pain (13.2%). In no other age range did males (or females) report 'no pain' while also reporting recent opioid use to the extent seen in the youngest male group. There was not enough evidence to reject the null hypothesis of no difference between males and females of each age group using opioid analgesia for any level of pain severity.

Figure 3a and 3b

Figures 4a and 4b illustrate the distribution of pain severity in males and females overall using non-opioid analgesia during the previous two weeks. The highest prevalence of non-opioid analgesia use was seen in younger males and females (15 to 44 years) reporting very mild to mild pain, and older males and females (≥45 years) with moderate to very severe pain. In both younger and older age groups, a small percentage of males and females who took non-opioid analgesia reported no pain. Males had a significantly greater percentage using non-opioid analgesia in the 45 to 54 year age group reporting no pain ($p = 0.024$), in the 55 to 64 year age group with no pain ($p = 0.016$) and very mild to mild pain ($p = 0.026$), and the 75 to 84 year age group with no pain ($p = 0.006$) and very mild to mild pain ($p = 0.009$). A significantly higher proportion of females using non-opioid analgesia reported moderate to very severe pain in the 75 to 84 year age group ($p < 0.001$).

Figure 4a and 4b

## 4. Discussion

Through the 2011-12 Australian NHS it is estimated that 2.75 million (15.4%) Australians aged ≥15 years have chronic or reoccurring pain, comprising 16.1% of females and 14.6% of males. Almost three-quarters of females in the group with chronic or reoccurring pain reported that their pain had been moderate to very severe in the most recent four-week period. Over two thirds of Australians (68.2%) experienced some bodily pain within the most recent four-week period, affecting 71.1% of females and 65.2% of males, with one fifth also reporting chronic pain. Higher percentages of moderate to very severe pain were reported within almost every age group in females compared to males. An estimated one in eight persons with chronic pain had taken opioid analgesic medication within two weeks prior to the survey, with similar rates of overall use in males and females at 12.0% and 13.4% respectively. However, the highest reported percentages of opioid analgesia use were amongst the youngest (17.0%) and oldest (29.0%) females with chronic pain. In contrast, there was a trend of increasing prevalence of chronic pain in persons who reported using non-opioid analgesia with age, for both men and women. Most using opioid analgesia had experienced moderate to very severe pain over the most recent four-week period, except for males aged 15 to 24 years. Pain severity was highly variable in those who used non-opioid analgesia. While moderate to very severe pain was reported by the majority of non-opioid analgesia users in those aged ≥45 years, this was not the case in the younger age groups.

The percentages of chronic pain in the Australian population identified in this study are no greater than those reported over 15 years ago in the primary reference for chronic pain prevalence in Australia, Blyth et al. (2001) [14]. The Blyth et al. (2001) study, which was based upon a sample drawn from the state of New South Wales in 1999, reported the overall prevalence of chronic pain as 20% for females and 17% for males aged 15 to 84 years [14]. Similar estimates of chronic pain prevalence, 20% of females and 18% of males, were reported in a recent national study on patients, including children, seeking medical

treatment from a General Practitioner [16].However, differences in inclusion criteria in the study of general practice patients requires these results to be considered stand-alone.

In interpreting the results of the current study, it is also important to consider variations in definitions of chronic pain. The ABS defined chronic pain as self-reported pain which persisted or reoccurred over a six month period, similar to the definition used in a recent Danish study of population survey data [23]. In contrast, Blyth et al. (2001) and most other published Australian studies define chronic pain as pain occurring every day, over a three-month period within the most recent six months [14-16, 24]. The ABS definition used for the current study is thus arguably less stringent, which would be expected to lead to higher estimates of prevalence, rather than the lower estimates observed. Thus, it is apparent that the prevalence of chronic pain in the current study is no greater than these earlier estimates. In turn, there is no evidence to support an increase in chronic pain prevalence since the Blyth et al. (2001) study, and certainly not to the extent of the 15-fold increase in opioid analgesia dispensing episodes within the Australian population between 1992 and 2012 [4]. Further, the increase in opioid use reported in the literature cannot be ascribed to an increase in the overall proportion experiencing any bodily pain as the percentage of the population aged 18 years and above experiencing any bodily pain has remained constant at 68% from the 2007-08 NHS [25], to the current study. However, it is possible that an increase in pain severity in those with chronic pain over time could account for some of the increase in opioid use.

Many of the other findings noted above also show similarities to those found in the published literature. First, the estimate of opioid use in the Australian population with chronic pain, at 12% for males and just over 13% for females, and the 12% reported for Denmark[26]. Second, the estimate that just over two thirds of all Australians aged ≥18 years had experienced some pain during the last four weeks, shows some comparability to the 55.7% reported for the US population in 2012 [13]. Third, the finding that moderate to very severe pain was more prevalent in females across most age groups is consistent with previous findings of epidemiological and experimental research[29]. Nahin (2015) also found that females in the US population had a higher prevalence of more severe pain, but only in specific language and cultural groups [13] Fourth, the majority of those using opioid analgesia also reported recent moderate to very severe pain, similar to a large, cross-

sectional study of n=10,066 participants in Denmark [30]. This is also consistent with current prescribing recommendations in Australia [17] and by the World Health Organisation [18].

Also consistent with previous research is the relatively high use of opioid medications in the elderly seen in this study [31]. This earlier research found that between 2002 to 2009 buprenorphine, fentanyl, oxycodone (5mg, both immediate and modified release) and tramadol (100mg) dispensing in Australia was highest in females aged 90 to 99 years, even with palliative care excluded [32]. Likewise, opioid prescriptions for both morphine and oxycodone have been reported as most common among elderly Australians aged ≥80 years [3]. Given that opioid use in older people has been associated with an increased risk of medication related hospitalisations and numerous adverse events including falls causing injury, fracture, dizziness and delirium [4, 27, 28], our findings re-emphasise the concerns raised in these previous studies.

As differences between male and female use of opioid analgesia in those with chronic pain were very apparent in the current study, we reiterate the call from Darnall, Stacey and Chou (2012) for future research to explore sex differences in more depth and to provide more detailed analysis on these themes[9]. The importance of sex differences is reflected in previous Australian research which demonstrated that females are more likely than males to intentionally overdose on opioid analgesia, specifically codeine [34]. Further, special consideration should be given to women of reproductive age. While it is imperative that females of reproductive age receive analgesic medication as medically indicated, it also is vital to allow them to make an informed decision on the risks and benefits of ongoing use of analgesic medication should pregnancy occur [33]. Additional epidemiological research is also needed to understand treatment option availability and utilisation, including the impact of treatment availability on daily functioning and quality of life of people living with pain conditions in Australia.

The strengths of this study include the use of data collected as part of the 2011-12 Australian NHS in a robust and rigorous manner by trained staff of the ABS, with a response rate of over 80%. We are limited however, by the fact that this survey relies mainly upon self-reported data. While this may be less of an issue for subjective, pain-related variables where self-report is considered the gold standard [35], self-report of medication use may not be as robust as medical record audit or linkage of prescription data [13]. If so, our

results will likely underestimate the proportion of the Australian population taking opioid and non-opioid analgesia. However, as participants were asked to physically provide the interviewer with all medications taken over the previous two weeks, this study's findings are strengthened compared to self-reported medication use alone. Persons in hospital and other care facilities were not sampled, and the wide confidence intervals for some data are likely reflective of smaller sample sizes in the youngest and oldest age groups. Further analysis of chronic pain data was not possible due to data access restrictions. We were also limited by the specific questions asked within the survey. While chronic pain and medication use was asked of participants of all ages, questions about pain severity were only asked to participants aged ≥18 years. We were not able to distinguish whether the reported severity of bodily pain changed due to analgesia use. We were also not able to distinguish whether analgesia taken was prescribed or purchased 'over the counter'. This survey is also unlikely to accurately capture non-adherent or illicit use of analgesic medications.

Chronic pain and opioid analgesic medication use are important public health issues in Australia. Approximately 2.75 million Australians aged ≥15 years (15.4%) live with chronic or reoccurring pain. As there was no evidence to support an increase in chronic pain within the Australian population compared with previous estimates, the increased use of opioid analgesic medications noted within the literature thus appears consistent with changing treatment and/or prescribing patterns for these medications over time, potentially including for chronic pain. A higher percentage of females experienced chronic pain, moderate to very severe pain and reported use of opioid analgesic medications within almost every age group. We reiterate calls for future research to explore sex differences in the utilisation of analgesia in more depth. We also call for more detailed analysis relating to the use of opioid analgesia in those with chronic pain, including assessment of daily functioning, patient satisfaction and quality of life.

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## Author contributions and conflict of interest statement

AM, KS, RB and AN designed the analysis and wrote the manuscript, AM and MB conducted the statistical analysis. All authors discussed the results, edited the manuscript and approved the final draft. Statistical analysis of the chronic pain data was conducted by the Australian Bureau of Statistics (ABS). KS, AM and MB have no conflicts of interest to declare. AN lives with a chronic pain condition. RB has been an investigator on untied investigator-driven educational grants from Reckitt Benckiser and has received an untied educational grant from Mundipharma for post-marketing surveillance studies of Reformulated OxyContin®. These untied grants are all unrelated to the current study.

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**Table 1:** Severity of pain over the last four weeks in Australians aged ≥18 years[a] with chronic pain. Supplied by the Australian Bureau of Statistics, customised report 2015.

| | Females | Males |
|---|---|---|
| **Pain severity in the last four weeks** | **Estimate '000 (%)** | **Estimate '000 (%)** |
| None | 34.9[b] (2.4[b]) | 38.0 (3.0) |
| Very mild - Mild | 337.3 (23.4) | 403.8 (31.6) |
| Moderate - Very Severe | 1,042.7 (72.2) | 814.3 (63.8) |
| **Total** | 1414.[c] | 1,256.[c] |

Notes:

[a] Bodily pain data only available for those aged 18 years and over

[b] Relative Standard Error between 25- 50%

[c] Totals do not equal 100%, data for persons who responded 'not applicable' or were unknown were not provided

**Table 2:** Pain severity in all Australians by age group (aged ≥15 years)

| | | | % | 95% CI | | | | % | 95% CI |
|---|---|---|---|---|---|---|---|---|---|
| Females | 15 to 24 years | No pain | 25.24 | (21.46-29.01) | Males | 15 to 24 years | No pain | 29.03 | (25.49-32.57) |
| | | Very mild to mild pain | 30.07 | (25.88-34.27) | | | Very mild to mild pain | 32.21 | (28.50-35.92) |
| | | Moderate to very severe pain | 16.22 | (13.31-19.14) | | | Moderate to very severe pain | 10.28 | (7.63-12.92) |
| | | Not asked/not known | 28.47 | (27.76-29.18) | | | Not asked/not known | 28.49 | (28.05-28.92) |
| | 25 to 34 years | No pain | 36.00 | (32.61-39.40) | | 25 to 34 years | No pain | 38.22 | (33.94-42.50) |
| | | Very mild to mild pain | 44.47 | (41.11-47.84) | | | Very mild to mild pain | 45.79 | (41.68-49.91) |
| | | Moderate to very severe pain | 19.49 | (17.30-21.69) | | | Moderate to very severe pain | 15.35 | (12.84-17.87) |
| | | Not asked/not known | 0.03 | (0.00-0.10) | | | Not asked/not known | 0.63 | (0.00-1.26) |
| | 35 to 44 years | No pain | 30.05 | (27.02-33.09) | | 35 to 44 years | No pain | 32.74 | (29.56-35.91) |
| | | Very mild to mild pain | 43.00 | (39.70-46.30) | | | Very mild to mild pain | 44.58 | (41.46-47.69) |
| | | Moderate to very severe pain | 26.85 | (23.74-29.95) | | | Moderate to very severe pain | 22.32 | (19.47-25.17) |
| | | Not asked/not known | 0.10 | (0.05-0.30) | | | Not asked/not known | 0.37 | (0.00-0.74) |
| | 45 to 54 years | No pain | 25.17 | (22.09-28.24) | | 45 to 54 years | No pain | 33.46 | (29.76-37.15) |
| | | Very mild to mild pain | 45.21 | (42.49-47.94) | | | Very mild to mild pain | 41.28 | (37.56-45.01) |
| | | Moderate to very severe pain | 29.45 | (26.68-32.21) | | | Moderate to very severe pain | 24.50 | (20.91-28.09) |
| | | Not asked/not known | 0.17 | (0.00-0.42) | | | Not asked/not known | 0.76 | (0.03-1.49) |
| | 55 to 64 years | No pain | 21.27 | (18.62-23.92) | | 55 to 64 years | No pain | 29.87 | (26.40-33.35) |
| | | Very mild to mild pain | 39.72 | (36.99-42.45) | | | Very mild to mild pain | 40.04 | (36.11-43.97) |
| | | Moderate to very severe pain | 38.12 | (35.09-41.16) | | | Moderate to very severe pain | 29.50 | (25.57-33.43) |
| | | Not asked/not known | 0.89 | (0.08-1.69) | | | Not asked/not known | 0.58 | (0.00-1.28) |
| | 65 to 74 years | No pain | 23.67 | (20.02-27.32) | | 65 to 74 years | No pain | 27.72 | (24.26-31.17) |
| | | Very mild to mild pain | 35.04 | (31.39-38.70) | | | Very mild to mild pain | 35.83 | (32.12-39.54) |
| | | Moderate to very severe pain | 40.48 | (36.79-44.17) | | | Moderate to very severe pain | 35.70 | (31.84-39.57) |
| | | Not asked/not known | 0.81 | (0.00-1.85) | | | Not asked/not known | 0.75 | (0.05-1.45) |
| | 75 to 84 years | No pain | 21.55 | (17.71-25.38) | | 75 to 84 years | No pain | 34.61 | (27.90-41.32) |
| | | Very mild to mild pain | 27.01 | (23.52-30.50) | | | Very mild to mild pain | 37.11 | (31.15-43.07) |
| | | Moderate to very severe pain | 49.94 | (45.34-54.54) | | | Moderate to very severe pain | 25.84 | (20.68-31.01) |
| | | Not asked/not known | 1.51 | (0.00-3.28) | | | Not asked/not known | 2.43 | (0.74-4.12) |
| | 85 years + | No pain | 24.61 | (17.21-32.01) | | 85 years + | No pain | 25.87 | (14.87-36.86) |
| | | Very mild to mild pain | 25.59 | (18.61-32.56) | | | Very mild to mild pain | 32.37 | (20.74-44.00) |
| | | Moderate to very severe pain | 41.83 | (33.12-50.55) | | | Moderate to very severe pain | 34.95 | (21.87-48.04) |
| | | Not asked/not known | 7.97 | (0.00-16.74) | | | Not asked/not known | 6.81 | (0.00-14.20) |

## Figure legends

**Figure 1:** Distribution of Australians aged ≥15 years with chronic or reoccurring pain compared to those using opioid analgesic medications, by 10-year age group and sex. Supplied by the Australian Bureau of Statistics, Customised report 2015. Confidence intervals are not available for chronic pain data.

**Figure 2:** Distribution of analgesic medication use by Australians aged ≥15 years with chronic or reoccurring pain, by 10-year age group and sex, a) Opioid analgesia use, b) Non-opioid analgesia use. Supplied by the Australian Bureau of Statistics, Customised report 2015. Confidence intervals are not available for chronic pain data.

**Figure 3:** Pain severity in Australians aged ≥15 years using opioid analgesic medications, by 10-year age group and sex, a) Females b) Males. Error bars represent 95% confidence intervals

**Figure 4:** Pain severity in Australians aged ≥15 years using non-opioid analgesic medications, by 10-year age group and sex, a) Females b) Males. Error bars represent 95% confidence intervals.

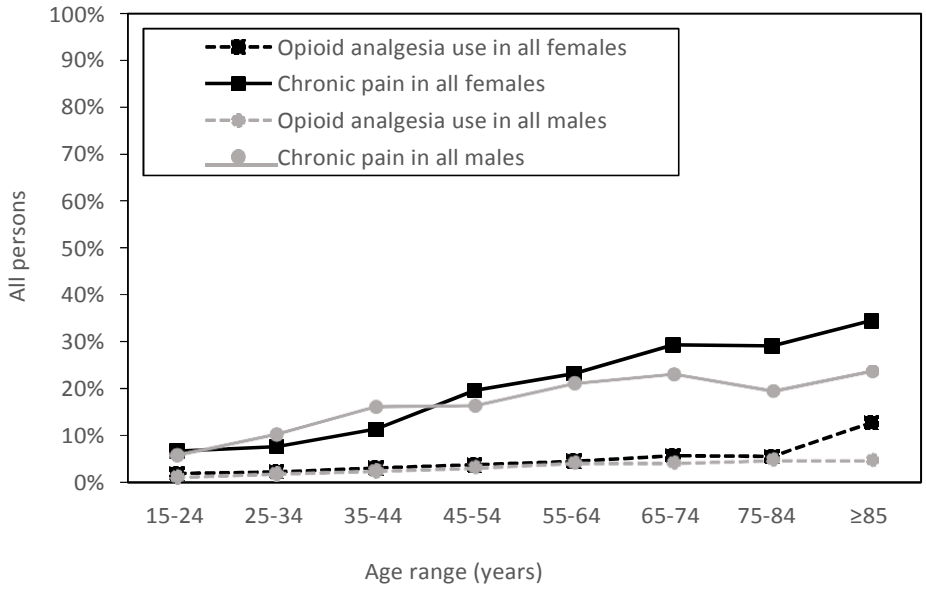
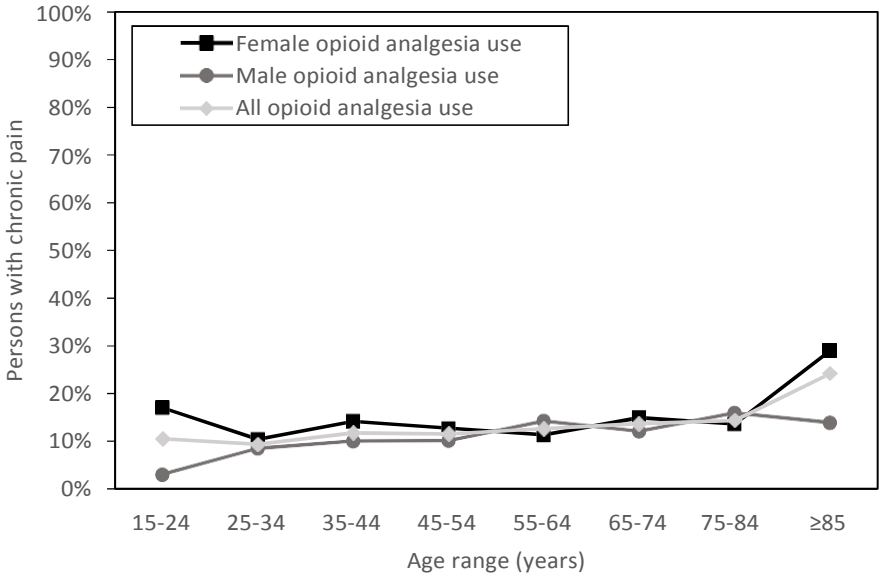
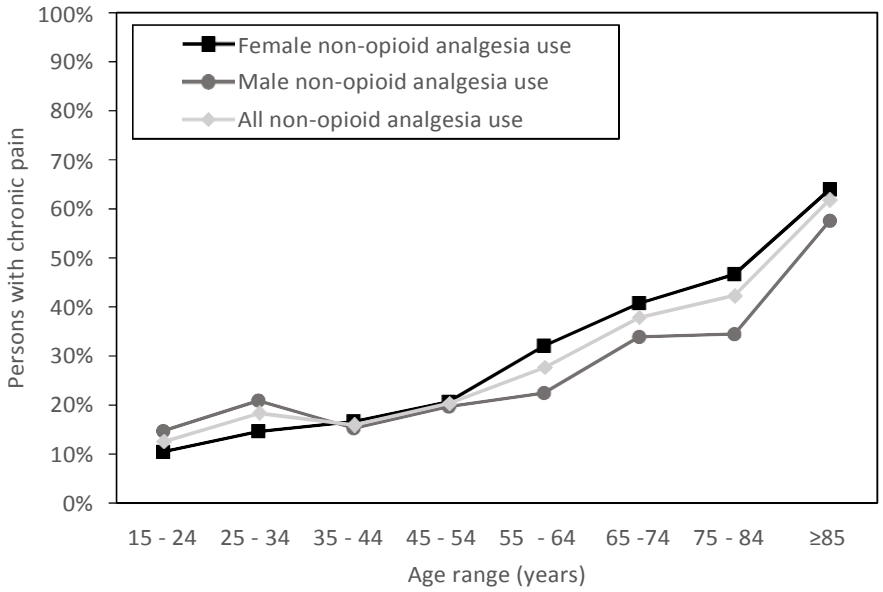

100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
All persons
Opioid analgesia use in all females
Chronic pain in all females
Opioid analgesia use in all males
Chronic pain in all males
15-24
25-34
35-44
45-54
55-64
65-74
75-84
≥85
Age range (years)

Figure 1

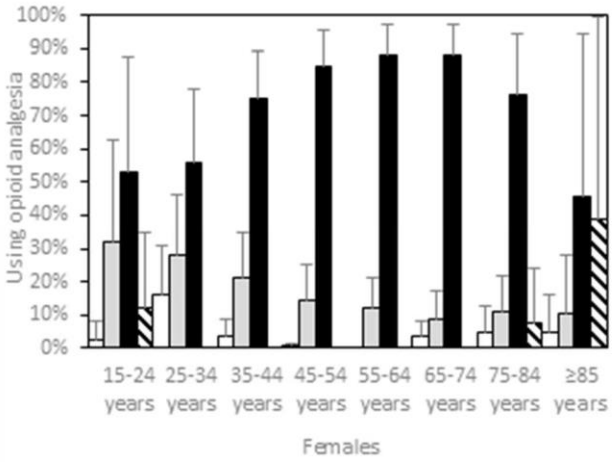
2a)


Female opioid analgesia use
Male opioid analgesia use
All opioid analgesia use
Persons with chronic pain
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
15-24
25-34
35-44
45-54
55-64
65-74
75-84
≥85
Age range (years)

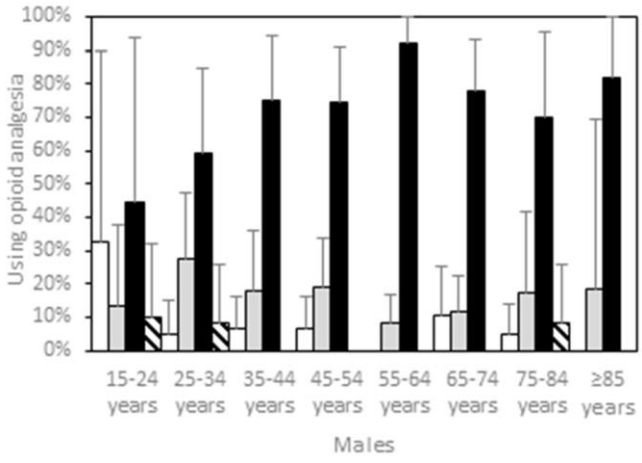
2b)

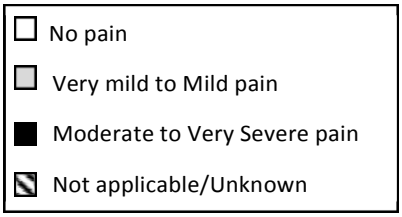

Female non-opioid analgesia use
Male non-opioid analgesia use
All non-opioid analgesia use
Persons with chronic pain
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
15 - 24
25 - 34
35 - 44
45 - 54
55 - 64
65 -74
75 - 84
≥85
Age range (years)

3a)

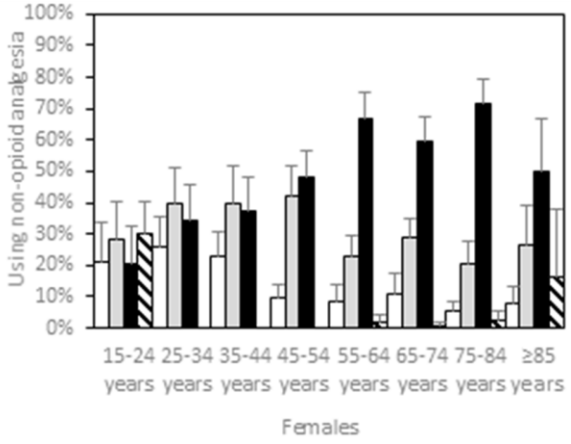

100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Using opioid analgesia
15-24 years
25-34 years
35-44 years
45-54 years
55-64 years
65-74 years
75-84 years
≥85 years
Females

3b)

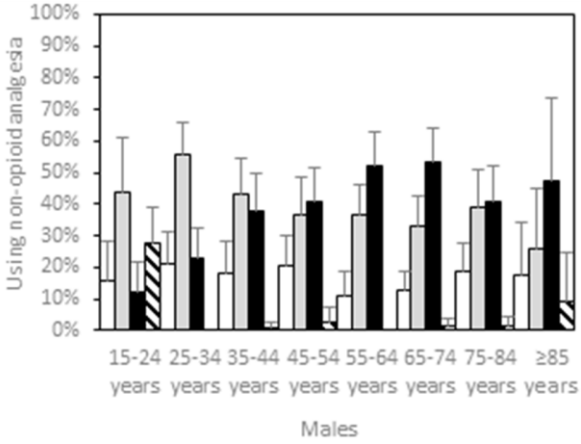

100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Using opioid analgesia
15-24 years
25-34 years
35-44 years
45-54 years
55-64 years
65-74 years
75-84 years
≥85 years
Males

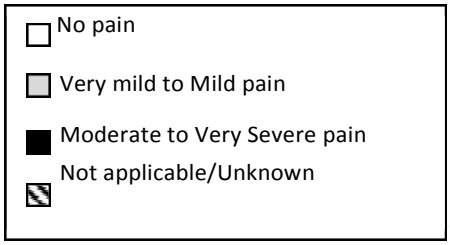

No pain
Very mild to Mild pain
Moderate to Very Severe pain
Not applicable/Unknown

4a)


100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Using non-opioid analgesia
15-24 years
25-34 years
35-44 years
45-54 years
55-64 years
65-74 years
75-84 years
≥85 years
Females

4b)


100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Using non-opioid analgesia
15-24 years
25-34 years
35-44 years
45-54 years
55-64 years
65-74 years
75-84 years
≥85 years
Males


No pain
Very mild to Mild pain
Moderate to Very Severe pain
Not applicable/Unknown