Government of **Western Australia**
Drug and Alcohol Office

The Secretary
Scheduling Secretariat
GPO Box 9848
CANBERRA ACT 2650
medicines.scheduling@tga.gov.au

Submission on Proposed Amendments to the Poisons Standard (Medicines): Proposal to reschedule codeine from Schedule 3 to Schedule 4

I write in response to the invitation for public comment on the proposed amendments to the Poisons Standard (Medicines). The Drug and Alcohol Office has a specific interest in the proposal to delete the Schedule 3 entry for codeine, and reschedule the current Schedule 3 codeine entry to Schedule 4 due to the well recognised occurrence of serious illness, toxicity, dependence and deaths associated with the misuse of these preparations.

The Drug and Alcohol Office (DAO) aims to prevent and reduce the adverse impacts of alcohol and other drugs in the Western Australian community. DAO is a statutory authority and is accountable to the WA Minister for Mental Health.

DAO strongly supports the proposed rescheduling of *all current Schedule 3 preparations containing codeine* to Schedule 4.

Codeine is generally perceived in the community as a safe and effective analgesic, with a number of lower dose combination preparations currently available without prescription. However, codeine is an opiate and as such has an addictive potential. Codeine tolerance and dependence, and subsequent harmful use, can occur in people who had initially used over-the-counter (OTC) codeine products for an appropriate treatment purpose.

DAO is concerned about the harmful effects of tablets containing a combination of codeine with non-steroidal anti-inflammatory drugs (NSAIDs) or paracetamol. The risk of toxicity increases when over use of these combination preparations result in the inadvertent ingestion of supratherapeutic doses of paracetamol or NSAIDs. Risks include liver toxicity, gastrointestinal complications, serious morbidity and potentially death.

Given the risk of dependence, which can lead to serious harms, DAO is of the view that it is highly desirable for all OTC medication containing codeine to be rescheduled to Schedule 4.

This submission is supported by Dr Allan Quigley, the Clinical Director of the Drug and Alcohol Office's Next Step specialist treatment service in Western Australia.

Yours sincerely

[redacted]

6 May 2015

[redacted]

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XDAOL001

5th May 2015

Department of Health
Therapeutic Goods Administration

To whom it may concern:

SUBMISSION :
Proposed Amendments to the Poisons Standard (Medicines)
Reschedule the current Schedule 3 codeine entry to Schedule 4

I write to you as a member of the community and as a person whose life has been impacted significantly by the affects of codeine addiction. My [redacted] is a codeine addict and the damage caused by this drug to him, [redacted] our lives is immeasurable.

This seemingly harmless drug that most of us have in the medicine cabinet and use occasionally when experiencing worse than usual pain, is so destructive to those who find themselves addicted. In my [redacted] case, as it starts out for many, he started taking codeine as a result of a reoccurring back problem from an injury sustained many years before. The codeine would help with the pain, but he found himself still taking the codeine even after the back episode had resolved itself. This is a very long term addiction spanning over many years and one I was not aware of when I first met my husband 13 years ago. I knew he took these pills (codeine), saw him take them a lot (always supposedly as his back was "playing up") but never dreamed they were addictive. This only presented itself and only then did it become clear to me on a stopover for a few days in Dubai where codeine couldn't be purchased over the counter and my [redacted] then began to show the signs of withdrawal that it was apparent he was addicted to this drug.

Since then over several years he has tried all avenues of assistance to overcome his codeine addiction: ATODS, ongoing support from his family doctor and a psychologist, Narcotics Anonymous including the 10 Step Programme and the support of sponsors, regular urine testing to act as a deterrent, a "no cash policy" so he couldn't purchase codeine and so on and so on. But despite all of this support and preventive measures he would continually relapse and reuse and we would start all over again with him withdrawing from the drug and start the count again of "how many days clean". The withdrawal alone from codeine is cruel and undignified yet reasonably fast, but for some inexplicable reason the pull to start taking this drug again is overwhelming regardless of how bad the withdrawal from it might have been. All of this took its toll on [redacted] destroyed us.

It is really hard to explain to others who don't understand this addiction how codeine affects a person. They don't look or act like they are drunk or even like they are high – it's subtle, yet still destructive. My [redacted] would think he was bullet proof, yet have no confidence, would have unreasonable fears and irrational thoughts about everything. Speak inappropriately at times and react randomly. His mind would be confused and addled, yet this drug allowed him to still function in society, work in the community, and seem like an average person. He would experience enormous lows and unpredictable highs. The more people became aware of his addiction led him to hiding his addiction further and further, which lead to lies, betrayal, distrust, stealing money, losing jobs, having car accidents, compromising himself and others. His current work enables him to travel around the [redacted] and [redacted] freely and call in to any pharmacy to buy codeine. To this day his life revolves around waking up and trying to work out where he will buy his codeine today to fuel his habit. It is all consuming and nothing and no one else really matters. I appreciate addiction is an illness and only know too well how demoralising it is for the person suffering the addiction but it is far too simple to purchase this drug which is so easy to become addicted to.

Codeine is relatively inexpensive and very accessible with virtually a pharmacy on every corner. While you have to present your identification to buy it and have it labelled it still is being sold to those who are addicts. The onus is on the pharmacist to ascertain in a brief consultation period at the counter if the reason for wanting to buy the codeine is legitimate. How can such an assessment be carried out in a short space of time with people who have (sadly due to their addiction) become masters of storytelling with believable seemingly flawless reasons for needing to buy the codeine?

The rescheduling of the drug in order that a prescription is required would significantly impact by ensuring that codeine if given to patients for the right reasons with viable and legitimate conditions. Every day people, with everyday lives are being caught up with this addiction and making it as easy as walking into a pharmacy and obtaining codeine so readily is not helping society overcome this problem. If a person has chronic pain which requires them to take codeine then there is something medically wrong and therefore they should be consulting a doctor to establish the cause and remedy of this pain and if codeine is required then a prescription under the guidance and supervision of doctor could be issued with follow up consultation involved.

Even if a person is denied being able to buy codeine from one pharmacy, it doesn't stop them from going to the next, then the next until they succeed. Through my experience with my husband trying to overcome this addiction we went to various pharmacies and asked them not to serve him should he turn up there but this is virtually an impossible and impractical task with so many pharmacies out there.

The irony of all of this is my [redacted] is a pharmacist – he knows only too well the prevalence of this addiction is our community and on the flipside from his personal experience with my [redacted] also knows how consuming this addiction can be. I understand addiction enough living with my [redacted] to know this illness is harsh and complicated – I also understand that people have addictive personalities and this is certainly the case for my [redacted] It may well be if it wasn't this drug of choice in codeine it could be something else – but it is codeine and it is far too easy to buy everyday.

If rescheduling the drug is not an option then placing buyers of codeine names on a national database like Pseudoephedrine is possible another answer to this problem. This would ensure pharmacy shopping was not an option because they would be flagged online wherever they attempted to purchase codeine and their abuse of the drug would be picked up and the pharmacist could refuse them.

To this day, my [redacted] continues to take codeine. His addiction has only worsened with [redacted] – and it's a hard thing to wrap your head around that a drug is more important than yourself, [redacted] then a decent happy life. He is a man with so much to offer and so much going for him, but his world is overruled by codeine. The damage and destruction addiction causes not just to the addict's life and health but those around them are overwhelming and devastating.

I would ask the proposed amendment to reschedule codeine from 3 to 4 be strongly considered and recommended as codeine is such a growing and yet avoidable problem within our society if only the proper restrictions could be placed on this drug. I fully support this amendment if it serves to stop this very silent destructive problem. It is affecting normal people who become hooked very quickly. The price paid for this addiction is high not only to the addict but to their families and friends. If anything can be implemented to prevent this ongoing problem it should be enforced as soon as possible. This amendment, if taken up won't change or fix [redacted], it may not even help my [redacted] as I'm sure the damage done to his mind and his body from being a long term addict of codeine is irreversible, but hopefully it will significantly help in the future and stop destroying the lives of others.

Kind regards

[redacted]
[redacted]
[redacted]

AUSTRALIAN
PAIN MANAGEMENT
ASSOCIATION

Submission
to the
Therapeutic Goods Administration
regarding proposed amendments to the Poisons Standards (medicines) in relation to codeine

Who we are

APMA is a national consumer health charity which advocates on behalf of the more than 3.2 million Australians from all walks of life estimated to be suffering from pain – with a particular focus on chronic (persistent) pain. APMA supports individuals with chronic pain, and their families across Australia. The organization is head-quartered in Brisbane, and was established in 2009 in response to the need for evidence-based information and services for people living with persistent pain, and to provide a voice and community support for them, their carers and families.

APMA provides a number of services including:

- a website containing persistent pain information, management options and reliable and accessible information for people living with pain (**www.painmanagement.org.au/**) ;
- **Pain link**, a national telephone helpline service **1300 340 357**;
- a national network of pain support groups;
- community education and outreach;
- education and workshops for the medical and allied health professions;
- lobbying for improved hospital, medical and health services in the area of pain management.

As a result of its membership base, services and outreach, APMA deals on a daily basis with the impact of persistent pain, chronic disease and use and access to (or lack of use and access) to various pain medications including codeine.

Background

The TGA has sought comments from interested parties on proposed amendments to the Poisons Standard relating to codeine referred by the delegate for scheduling advice. The amendments specifically propose to delete the Schedule 3 entry for codeine, and reschedule the current Schedule 3 codeine entry to Schedule 4 due to potential issues of morbidity, toxicity and dependence.

The notice also indicated that consideration may be given as to whether all current Schedule 3 preparations should be rescheduled to Schedule 4, or whether any rescheduling to Schedule 4 should only apply to combination analgesic products containing codeine, and that consideration may be given as to whether the Schedule 2 entry for codeine should also be amended.

Section 52E of the *Therapeutic Goods Act 1989* requires the Secretary of the Department of Health to take the following matters into account (where relevant)

(a) the risks and benefits of the use of a substance;
(b) the purposes for which a substance is to be used and the extent of use of a substance;
(c) the toxicity of a substance;
(d) the dosage, formulation, labelling, packaging and presentation of a substance;

(e) the potential for abuse of a substance; and
(f) any other matters that the Secretary considers necessary to protect public health.

The current state of the management of pain in Australia

The management of pain in Australia remains shockingly inadequate, despite the efforts of health practitioners, consumer organizations and, belatedly, health authorities. One in five Australians will suffer persistent pain in their lifetime yet up to 80% living with this debilitating condition are missing out on treatment that could improve their health and quality of life. Access Economics in 2007 estimated that persistent pain costs the Australian economy $34 billion per annum, is Australia's third most costly health problem and as the population ages the numbers and costs are only increasing[1]. Despite these figures, persistent pain is still not recognized as a chronic condition for the purpose of action in response to the growing impact on the health of Australians and the health care system[2].

It has been estimated that less than 50% of patients with cancer pain receive effective relief, and similar levels of patients with acute pain fail to receive effective relief – despite the capability of current techniques to relieve more than 90% of such patients. Improved management of acute pain would reduce the subsequent development of chronic pain. It has also been estimated that less than 10% of patients with chronic pain receive effective relief – again, despite the capability of current techniques to relieve more than 80% of such patients, and such relief being capable of reducing the worsening of conditions and symptomology[3].

There are a range of different categories of pain, including acute, chronic, neuropathic and cancer-related pain. Living with and managing persistent pain requires reliable and up-to-date medical treatment (including allied health and pharmaceutical assistance). It also needs self-management capability, utilising lifestyle information, activity and support. A combination of these measures can restore function and quality of life to individuals whose main disability is caused by pain.

The primary health system does not support access to pain management programs which utilise non-drug therapies such as exercise, physical therapies and psychological interventions, shown by the (unfortunately limited) available evidence to be far more effective than medications.

People living with persistent pain are also often poorly served by the pharmaceutical options currently able to be accessed. Opioid-based medications remain contentious, with reducing efficacy over time. Many practitioners experience difficulty prescribing appropriately. There is a reluctance or ignorance on the part of many health practitioners at the primary level when

[1] Access Economics Pty Ltd *The High Price of Pain: The economic impact of persistent pain in Australia* MBF Foundation November 2007
[2] National Health Priority Action Council *National Chronic Disease Strategy* Australian Government Department of Health and Ageing, Canberra 2006
[3] National Pain Summit 2010 *National Pain Strategy; Pain management for all Australians* http://www.painaustralia.org.au/images/painaustralia/National_Pain_Strategy_2011.pdf p.2

it comes to prescribing appropriate, effective medications[4]. In relation to other pharmaceutical treatments available, numbers needed to treat (NNT) often remain high. Even where medications are available which can provide individual patients with relief and/or assistance, obtaining or affording those medications can be difficult. And many medications which are of assistance are expensive or unaffordable, in many cases because they are not PBS listed or where listed use is restricted to certain indications or conditions only. Many people living with pain are desperate, and often expend considerable sums of money exploring complementary and alternative medicines and therapies with no little or no scientific basis.

It is against this background of a health system inadequately addressing the pain, and pain management needs, of millions of people, that the disappointing and inexplicable decision to threaten to withdraw affordable and accessible access to codeine medications has arisen.

The rescheduling of codeine cannot be justified on access and equity grounds

APMA strongly opposes the proposal to prevent all people with chronic pain or pain conditions of acute or shorter duration who require or rely upon medicines containing codeine from accessing these medicines unless they have attended a doctor and obtained a prescription.

Health consumers are already faced with high out-of-pocket expenses, which impact upon their ability to access the services and treatments clinically warranted. As the Federal Minister for Health the Hon. Sussan Ley recently observed, "Pharmacists are well qualified to advise, to assess, and to determine what somebody's requests for medicines are, and how appropriate those requests may be." To impose additional financial costs through unnecessary consultations will severely impact upon the poor, the elderly and the chronically ill.

The difficulties faced by many people in accessing a doctor (as well as a pharmacist) will severely impact upon the accessibility of treatment. This arises from difficulties in obtaining an appointment, distances required to be travelled (especially in rural areas), mobility and transport obstacles, as well as the time required for those in employment or with family responsibilities.

[4] It is frequently reported that GPs receive less training in pain management than vets. A 1988 report estimated that an average of 3.5 hours in a 5 year medical degree was devoted to pain and pain control (Marcer, D & Deighton, S 'Intractable pain: a neglected area of medical education in the UK' *Journal of the Royal Society of Medicine* Vol 81 Dec 1988). Even if the time devoted to undergraduate training in this area is now (slightly) higher, APMA regularly encounter stories which confirm the need for drastic increases and improvement in the initial and continuing professional development of general practitioners and other primary level allied health practitioners.

Requiring doctor prescriptions a misuse of health resources

Waiting lists to see pain specialists, particularly in the public system, are extensive and the delay in initial access significant. Delays are frequently experienced in gaining appointments to see over-worked GPs – who are often reluctance to bulk-bill or provide the longer consultations necessitated by persistent pain conditions. These current realities would be dramatically worsened were obtaining medicines containing codeine rescheduled so as to require a GP appointment and prescription. Increased hospital Emergency Department presentations may also result.

There are a wide range of reasons (conditions) for consumers using medicines containing codeine, with the product and length of use varying for age and condition. A recent survey undertaken by the Pharmacy Guild of Australia indicated that the codeine product had been originally recommended for more than 65% of respondents by a doctor or pain specialist, with almost 10% receiving advice from a dentist and 21% from a pharmacist[5]. The vast majority of consumers who use the products appropriately – and in line with health profession guidance – will be required to have unnecessary viits to GPs to obtain a prescription. Ironically, having been required to spend time and money consulting a GP, many might well end up pressuring their GP for prescriptions for stronger medications if this amendment were to be approved.

As noted in the National Pharmaceutical Drug Misuse Framework for Action, "Pharmacists are an under-utilised resource in enhancing the quality use of medications. There is an opportunity for pharmacists to become more involved in multi-disciplinary case conferencing, medication reviews and engagement with prescribers with a view to enhancing the quality use of these medications."[6]

The extent of problems arising from the use of medicines containing codeine has been magnified

The extent and severity of problems associated with medicines containing codeine do not warrant the medicines being rescheduled as prescription only medicines. Notwithstanding the harms experienced by a small proportion of people using codeine, and the risk of codeine dependence, this should not threaten the appropriate use and frequent benefit experienced by a significant proportion of the community. The harms are more commonly associated with the ibuprofen or paracetamol toxicity, rather than the codeine, content of the medications (and in many cases associated with abuse rather than misuse),

Deaths and other serious consequences are far lower than those associated with the rapidly increasing use of oxycodone – notwithstanding that drug's listing as a schedule 8 drug!

[5] *Consumer Survey of Schedule 3 products containing codeine,* Pharmacy Guild of Australia, April 2015 p.3
[6] Australian Government National Drug Strategy. National pharmaceutical drug misuse: Framework for action (2012-2015): a matter of balance. P. 25

Figure 1 shows the contrast between the dramatic increase in oxycodone, particularly since the year 2000, and morphine, compared to the almost static levels of codeine - despite its far greater prevalence of use in the community, and the 29% increase in the Australian population over this period.

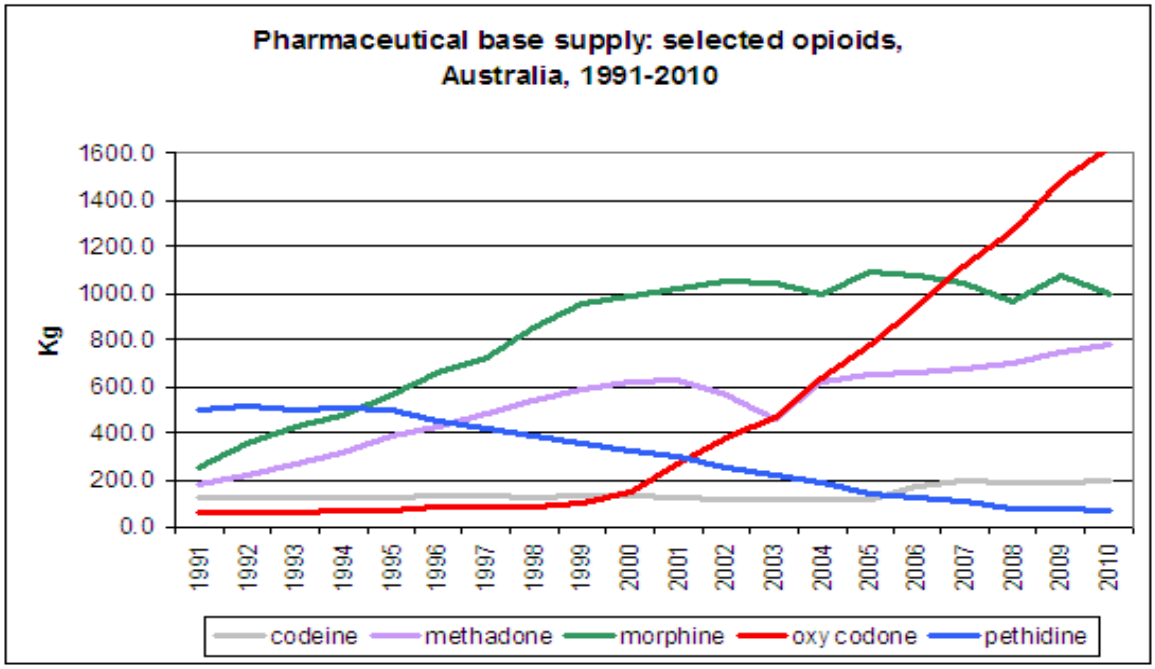

Figure 1. Pharmaceutical Base Supply: Selected Opioids Australia 1991-2010[7]

The approach proposed is inappropriate

The vast majority of consumers use the products appropriately – notwithstanding that more preferable and efficacious treatments may well be available.

The problem –to the extent that it is a problem – is far better and more effectively addressed by:

- the prompt implementation of a real-time prescription monitoring program for range of scheduled drug dispensing, consistent with the National pharmaceutical drug misuse: Framework for action;
- a significant expansion of pain management treatment options and resources;
- a comprehensive quality use of pain relieving medicines education campaign in the community, as is currently being discussed by a number of organisations (including APMA) with NPS MedicinesWise; and
- similarly, ensuring pharmacists use a systematic approach with every codeine sale to ensure consumers are aware that codeine has a dependence liability.

[7] Dobbin, 2011, cited in National pharmaceutical drug misuse: Framework for action (2012-2015): a matter of balance. P. 51

Conclusion

APMA believes that in arriving at the correct and preferable decision in this matter, the TGA and the delegate should heed the following observation in the National Pharmaceutical Drugs Misuse Strategy:

"A key theme in the Strategy is achieving a balance among diverse interests and ensuring that no Australians are disadvantaged or stigmatised. There is also a need to ensure continued medical access to these medications and to maximise their appropriate use, while minimising opportunities for misuse. There is a need to ensure that the clinically appropriate supply of these medications is maintained. It is also important that the Strategy empowers prescribers and pharmacists, enhances the information at their disposal and informs their decision-making."

In so doing, the decision is clear - pain medications containing codeine currently listed as S3 should continue to be listed as Schedule 3 drugs (with any such medications currently available as Schedule 2 drugs relisted as Schedule 3 drugs).

From: [redacted]
Sent: Thursday, 7 May 2015 10:17 AM
To: Medicines Scheduling
Subject: OTC Codeine sumission

Hi
Thanks for this opportunity to submit.
I have in the past published a letter in MJA 2011 (attached) regarding my concern about Codeine-containing combination analgesic products and associated morbidity observed at my hospital; one of my patients [redacted] had died as a result of abuse of [redacted], a he was found by his mother dead lying face down in a pool of vomited blood and the police later attending found a massive quantity of [redacted] empty packets concealed in his wardrobe and under his bed. This boy has seen many GPs in the months prior to death for "abdominal pain" and had been prescribed large amounts of antacids. The subsequent autopsy found perforated GU with a likely recent arterial bleeding site. (I have the full Coroner's report). I have numerous case experiences somewhat like this, including a 31yr male hotel-employee visiting multiple pharmacies daily and , as he tells me, he has no problem dressed in a suit, getting large quantities of [redacted], which he then takes by the handful (i.e. 30 – 40 tabs at a time) three times daily "for a buzz of energy". He discovered this effect a few years ago when after a dental extraction, his dentist recommended he try [redacted], but the "added" energy & euphoria he liked! He continues using it daily ~ 3 years despite two admissions to hospital for acute gastric bleeding and GU over-sewing. He is currently on [redacted] to help curtail his apparent addiction to Codeine.

Based upon my clinical experience, the serious effects noted (above examples), I appeal to the TGA to consider re-scheduling Codeine in combination analgesics, ideally restricting such to medical prescription only.

Yours sincerely,

[redacted]
Melbourne.

Misuse of codeine-containing combination analgesics

Michael A McDonough

To the Editor: Frei and colleagues recently drew our attention to combination analgesic misuse-related morbidity.[1] The same phenomenon has also been reported in New Zealand.[2] About 50 years ago, analgesic misuse was widespread in Australia and commonly involved chronic, excessive use of combination analgesics (including the aspirin–phenacetin–caffeine [APC] products, Bex and Vincent's Powders). After many years, some people who used APC developed "analgesic nephropathy", which made up 12%–15% of dialysis cases.[3]

I recently performed a retrospective chart review of patients who were referred to the Drug and Alcohol Services at the Western Hospital (Melbourne) for excessive compound analgesic use between September 2005 and September 2010. There were 32 patients (18% of all referrals; median age, 38 years; 23 were women). All had some form of chronic pain, had initiated compound analgesic use for acute pain (eg, headache) and all described progressive use of analgesics because of psychogenic effects (eg, "gave me energy", "helped me forget"). All 32 patients were diagnosed with opioid dependence and had medical and psychiatric problems correlating with their compound analgesic misuse.

One patient, a 34-year-old man, reported taking more than 70 codeine–ibuprofen tablets daily and sustained recurrent gastric ulceration, which eventually required surgery. Despite this, he continued to misuse the analgesics until he undertook opioid replacement pharmacotherapy.

A 24-year-old man misusing the same analgesic, despite completing a detoxification program, also relapsed and died after bleeding from gastric ulceration.[4] Overall, the patient profiles were remarkably similar to those described by Frei and colleagues.[1]

Combination analgesic misuse appears largely correlated with products containing drugs of dependence (eg, codeine) and the phenomenon of "rebound pain" (ie, pain that recurs after a short-acting analgesic effect wanes, or "medication overuse headache"). Most morbidity and mortality risks associated with combination analgesic misuse are a consequence of chronic overdose of the non-steroidal anti-inflammatory drug and/or paracetamol components. Paracetamol (mostly when in combination with an opioid analgesic) is reported as the commonest cause of acute liver failure in the United States and United Kingdom.[5] Another long-term complication can be hearing loss.[6] Two patients in my clinic group had hearing loss, and the ear, nose and throat specialist's opinion was that it was related to analgesic misuse. Dextropropoxyphene–paracetamol combination products are still available in Australia but are no longer available in the UK. I question the need for opioids in combination analgesic products and, if used, they should be restricted to prescription.

Competing interests: I have received consultancy fees and conference travel expenses from Reckitt Benckiser.

Michael A McDonough, Head of Addiction Medicine and Toxicology
Western Hospital, Melbourne, VIC.
michael.mcdonough@wh.org.au

1 Frei MY, Nielson S, Dobbin MD, Tobin CL. Serious morbidity associated with misuse of over-the-counter codeine–ibuprofen analgesics: a series of 27 cases. *Med J Aust* 2010; 193: 294-296.
2 Robinson GM, Robinson S, McCarthy P, Cameron C. Misuse of over-the-counter codeine-containing analgesics: dependence and other adverse effects. *N Z Med J* 2010; 123: 59-64.
3 Kincaid-Smith P. Analgesic nephropathy. *Kidney Int* 1978; 13: 1-4.
4 Coroner's case finding. Melbourne: Coroners Court of Victoria, November 2006.
5 Larson AM, Polson J, Fontana RJ, et al. Acetaminophen-induced acute liver failure: results of a United States multicenter, prospective study. *Hepatology* 2005; 42: 1364-1372.
6 Curhan SG, Eavey R, Shargorodsky J, Curhan GC. Analgesic use and the risk of hearing loss in men. *Am J Med* 2010; 123: 231-237. ❑

MONASH University

Department of Forensic Medicine
School of Public Health and Preventive Medicine
Faculty of Medicine, Nursing and Health Sciences

The Secretary
Scheduling Secretariat
GPO Box 9848
Canberra ACT 2601

Wednesday 6th May 2015

To the Secretary,

RE: Proposal to reschedule the current Schedule 3 codeine entry to Schedule 4

I write in response to your invitation for public comment regarding a proposal to delete the Schedule 3 entry for codeine, and reschedule the current Schedule 3 codeine entry to Schedule 4, due to potential issues of morbidity, toxicity and dependence.

My postdoctoral research in forensic toxicology and public health has examined the involvement of many different over-the-counter, prescription, and illicit drugs, in causing sudden, unexpected death. Alarmingly, we have identified a large number of cases involving addiction and toxicity from over-the-counter codeine-combination products, with many individuals unaware of the addictive potential of these easily obtainable products that most consider to be benign. This has highlighted an opportunity for death prevention and the safer use of these formulations.

I therefore support the proposed rescheduling of Schedule 3 codeine combination preparations to be available by prescription only, in order to better manage patients suffering from pain. Further, this will reduce the morbidity and mortality occurring as a result of the widespread and easy access of these addictive and potentially toxic drugs. Please find enclosed with this covering letter my submission, which represents my views as a [redacted] Researcher but does not necessarily reflect the views of [redacted]

Yours Sincerely,

[redacted]

[redacted]

Department of Forensic Medicine
[redacted]

Submission

1. Background

I am a Research Fellow in the [redacted] and adjunct researcher at the [redacted]. I am a forensic toxicologist and pharmacologist, with over 9 years experience in interpreting the involvement of alcohol, pharmaceutical medications and illicit drugs, in causing toxicity and death. My formal qualifications include a Bachelor of Science with Honours in Pharmacology and Doctor of Philosophy in Forensic Medicine from [redacted]. I am a 2013 Victoria Fellow and principle investigator of a multi-national research venture in collaboration with the [redacted], Sweden, amongst numerous other national and international collaborations. I work closely with [redacted], one of the world's leading forensic toxicologists, as well as forensic clinicians and scientists directly involved in Victorian medico-legal death investigations at the [redacted].

2. Harms associated with over-the-counter (OTC) codeine-combination analgesics

OTC codeine analgesics in combination with ibuprofen, paracetamol or aspirin are widely and easily available, with 1 in 3 Australian adults using them each year. However, the widespread and easy availability of these products expose a large number of vulnerable individuals to potential toxicity and addiction. There have been numerous published reports about misuse and addiction, and secondary harm due to high dose exposure to the non-opioid analgesic with which it is combined[1,2].

More than 20 studies published prior to 2015, including 18 from Australia and New Zealand, have described a total of 247 cases (221 Australian and 26 NZ) of serious harm from misuse of OTC codeine-ibuprofen analgesics, including life-threatening harm. It must also be noted that cases described in the medical literature are the more severe cases of toxicity resulting from high daily doses of OTC codeine-based products, and are likely to represent only a small proportion of those seeking treatment in the community for addiction to these formulations.

A study examining the characteristics of patients presenting for treatment of opioid dependence on pharmaceutical opioids in NSW, reported that of 145 patients, 36% nominated codeine as their principle opioid of concern[3]. Of these, 47 (94%) reported OTC codeine as their source, and 3 (6%) reported prescription codeine as the source. Surveys indicate that codeine dependent individuals are able to sustain high levels of use (up to 80 tablets a day) for prolonged periods, usually obtained from multiple pharmacies[4].

Although many believe that they need codeine-based products to adequately treat their pain, research shows that codeine (methylmorphine) is actually a weak analgesic (approximately one-tenth the analgesic activity of morphine), and provides only limited additional analgesic benefit when combined with non-opioid analgesics such as aspirin, paracetamol or ibuprofen. Indeed, a series of recent Cochrane systematic reviews demonstrated that a combination of ibuprofen and paracetamol, such as Maxigesic® or Nuromol®, provides better analgesia than OTC codeine analgesics – without the risk of codeine addiction[5].

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[1] Frei, M. Y., Nielsen, S., Dobbin, M. D. & Tobin, C. L. 2010. Serious morbidity associated with misuse of OTC codeine-ibuprofen analgesics: a series of 27 cases. *Med J Aust,* 193**,** 294-6.

[2] McDonough, M. A. 2011. Misuse of codeine-containing combination analgesics. *Med J Aust,* 194**,** 486.

[3] Nielsen S et al. Comparing treatment-seeking codeine users and strong opioid users: Findings from a novel case series. Drug Alc Review 2014. Dec 29. doi: 10.1111/dar.12224.

[4] Dobbin M, Tobin C. Over-the counter (OTC) ibuprofen/codeine analgesics: misuse and harm. Paper prepared for the National Drugs and Poisons Schedule Committee. 22 May 2008.

[5] Derry S, Moore RA, McQuay HJ. Single dose oral codeine, as a single agent, for acute postoperative pain in adults. Cochrane Database Syst Rev 2010;4:CD008099

Surveys of pharmacists describe a number of challenges in managing the safe supply of OTC codeine analgesics[6], reinforcing the need to make these drugs prescription only. Pharmacists report that they rely on the appearance of customers, some believing that codeine dependence is based on deviance and a deteriorating general appearance, which often is not the case with codeine-shoppers. Some find it difficult to establish therapeutic need and lack confidence in discussing misuse- particularly when there is the risk of resentment in some customers or even aggression and violence in others for refusal of sales, described as "codeine tantrums"[7]. Pharmacists also report concerns that if refused at one pharmacy, customers would simply attend an alternative pharmacy to obtain the codeine analgesics, some even driving long distances to different pharmacies on "codeine road trips"[8]. They also indicated the potential conflict of interest in the business environment of community pharmacy[9].

Pharmacists are reluctant to refuse supply to a customer and are somewhat compromised in the business environment of a pharmacy. They do not want to offend a customer based on the limited information required to obtain OTC codeine, in the public space of a pharmacy, without a medical history, without the chance to ask about risk factors such as a history of mental health disorder or substance abuse. Not only may they lose a sale, but they may lose a customer.

Alternatively, surveys of codeine dependent people have described the ease of obtaining OTC codeine, recognising the need to manage their attire, presentation and appearance in order to ensure codeine supply[10,11]. They reported rarely being refused supply and limited pharmacist intervention, and suggested that little information or advice about the risk of abuse or dependence was provided to them. Refusals tended to result in users purchasing the product at another pharmacy as in-house sales records are not easily shared between pharmacies.

3. Our Research

In 2013, we published a Letter to the Editor in the Medical Journal of Australia highlighting the fatal risks of OTC codeine-based analgesics, such as [redacted][12]. We found at least 7 deaths attributed to codeine-ibuprofen analgesic misuse, with toxicity manifesting as gastric erosions and ulceration in three individuals, chronic gastritis in one, renal necrosis and disease in 2 and hepatocyte necrosis in another. There were a further 2 deaths that were likely to be related to long-term misuse of [redacted] Importantly, one of these individuals was a confirmed „doctor shopper" who was subject to a regimen limiting her access to one doctor and one dispensing pharmacy- however she was easily able to obtain the OTC codeine-based products without prescription that led to her death.

Since then, we have identified numerous other coroners" cases involving misuse, addiction, and unintentional toxicity from these formulations. Many people believe that since they are available without prescription, they must be safe. However they have been associated with gastrointestinal bleeding, perforated ulcers, liver necrosis, and death. The number of Australians being treated for codeine addiction has more than tripled in the past 10 years. Hundreds of Australians are now on opioid replacement therapy, usually reserved for heroin addiction or addiction to prescription opioids, just to manage their OTC codeine addiction.

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3.1 Codeine-paracetamol related deaths in Victoria, NSW and Queensland

We recently conducted a study examining codeine and paracetamol related deaths, which demonstrates the widespread misuse of OTC and prescription codeine-combination products[13]. Using the National Coronial Information System (NCIS), we identified 441 coroners‟ cases from Victoria, NSW and Queensland, where codeine and paracetamol based products, with or without doxylamine (an antihistamine also present in Mersyndol®), were contributory to death. Most of these deaths involved individuals aged 35 to 54 years, with deaths in Australians as young as 16 years of age.

Many individuals using these codeine-combination pain killers are unaware of the active ingredients in these preparations, taking multiple formulations to treat their pain while unknowingly consuming increased amounts of each drug. Individuals may use prescribed codeine-based analgesics and overlap these with OTC formulations, or alternatively, use different branded medications such as [redacted] (codeine/ibuprofen) with [redacted] (codeine/paracetamol/doxylamine), producing excessive levels of codeine. There were at least 58 cases where the deceased had been using more than one medication containing paracetamol, codeine or doxylamine, with 19 cases where more than 3 of these products were used concomitantly. In one case, 9 different paracetamol based combination analgesics were found in the deceased‟s possession, of which 6 were obtained OTC.

In one case, an individual was consuming over 100 paracetamol-based analgesics daily, while another was taking over 75 a day. While these medications are indicated for short term use only, there were cases of regular daily use for up to 15 years. These cases demonstrate the ease with which people can obtain hundreds of these preparations OTC on a daily basis, in order to satisfy their addiction once tolerance to the drug has developed. Unfortunately this pattern is associated with a heightened risk for morbidity and mortality.

Doctor and pharmacy „shopping‟ was an issue in this cohort, with one individual who obtained 89 scripts from 22 doctors in 6 months for analgesics including OTC and prescription codeine products. Another individual had seen 19 doctors in 6 months for codeine/paracetamol formulations alone.

In one case, 90 boxes of prescription-only paracetamol and codeine medication were located in the home. Despite some individuals being reported by pharmacists and doctors to the Medicare Doctor Shopping program or Drugs and Poisons centres for their tendency to seek drugs beyond their therapeutic need, these individuals were still able to obtain the OTC formulations of codeine-based pain killers that ultimately caused their death.

As well as doctor/pharmacy shopping, other drug seeking behaviours were identified in 40 individuals. There were seven cases where medications or prescriptions were discovered with names of friends or family members. In Queensland one case was identified where the deceased would intentionally injure herself in order to obtain analgesics from hospitals, while another individual bought medication off cancer sufferers known to him. Three cases were identified involving health professionals obtaining medication from their place of work. Several doctors recalled concerns about patients who frequently reported lost or stolen prescriptions, while one deceased was in possession of a blank prescription pad.

Interestingly, there was a drop in cases after 2010, which coincided with the introduction of tighter controls of codeine-based products. On 1 May 2010 OTC codeine-based analgesics were removed from Schedule 2 and confined to Schedule 3, requiring supply by a pharmacist. Although this decline in codeine/paracetamol-related deaths may also be related to decreased case closure rates since that time, it demonstrates the power of up-scheduling codeine products in saving Australian lives. However, despite rescheduling OTC codeine analgesics to require involvement of a pharmacist in supply, the number of people seeking treatment for codeine dependence is still increasing.

[13] Approved by the Department of Health Human Research Ethics Committee (CF/14/18348)

The common features identified in deaths associated with high dose misuse of OTC codeine formulations include:

- A high prevalence of mental health disorders, including depression, obsessive compulsive disorder, bipolar disorder; all of which are prevalent in the community, as well as schizophrenia;
- People who live a marginal existence- living in supported accommodation, boarding houses, or living alone. The marginal nature and social isolation of these individuals is reflected in some individuals whose death is not discovered until several days after death because of their social isolation, and the body may be in early stages of decomposition;
- People under extreme stress and isolated from family or friends, leading to intentional self-harm, often with multiple empty packs of codeine-based formulations and other medicines located at the scene;
- People who have been refused prescription of opioids at their doctor following prescription shopping and substance misuse, leading to use of OTC codeine-based products due to their ease of procurement;
- Post-mortem toxicology results in both intentional and unintentional deaths showing concentrations that greatly exceed concentrations usually associated with a therapeutic range, indicating use of large quantities of codeine-based drugs.

4. Summary

There is now strong evidence that demonstrates that under current arrangements (Schedule 3 Pharmacist Medicine) there is a substantial level of harm from the easy and widespread availability of these opioid medicines. An increasing number of Australians are seeking treatment for dependence on OTC codeine analgesics, many experiencing serious, sometimes life-threatening adverse effects, and pharmacists face challenges in addressing drug-seeking by codeine dependent users.

The literature shows that adding low dose codeine to non-opioid analgesics provides little additional analgesic benefit and consumers can now self-medicate acute pain using newly available OTC analgesic products that provide better analgesia without the risk of codeine addiction and its consequences.

I support the proposal to delete the Schedule 3 entry for codeine, and reschedule the current Schedule 3 codeine entry to Schedule 4, due to potential issues of morbidity, toxicity and dependence. This submission has been complemented by collaboration with [redacted] and [redacted] at the [redacted], who also support the proposal for rescheduling. I also acknowledge [redacted] who collated the data in the study described in Section 3.1.

[redacted]

RACGP | The National Faculty of Specific Interests

7 May 2015

Therapeutic Goods Administration
136 Narrabundah Lane
SYMONSTON ACT 2609
Via email: medicines.scheduling@tga.gov.au

Dear Sir/Madam

Currently codeine is provided virtually unmonitored or unregulated in pharmacies while other opioids are only legally accessible through prescriptions from medical practitioners.

GPs frequently see people getting into trouble with over-the counter (OTC) codeine. The current scheduling structure deters pharmacists from refusing to supply opioids regardless of whether or not they feel compromised or pressured. The TGA can thus make it easier for health care providers to protect people from opioid-related harms.

For these reasons RACGP supports regulatory restrictions on access to codeine, which may include codeine's re-scheduling to an S4 medication.

Yours sincerely

[redacted]

TGA,

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Symonston ACT 2609,

Australia

medicines.scheduling@tga.gov.au

7 May 2015

Dear Sir or Madam

We write to support the re-scheduling of codeine to Schedule 4. There are a number of reasons behind our support. This submission will outline some of our concerns regarding the status quo, and why we feel it is better for our community for codeine, in any formulation, to be re-scheduled as Schedule 4. Firstly, codeine is a poor choice as an opioid analgesic. It relies on the CYP2D6 enzyme to convert it into morphine and make it active (1). Because many people may have either ultrarapid or non-existent rates of CYP2D6 activity, consuming any specific dose of codeine may equate to taking an unknown dose of morphine (1). This is a reason some people get no analgesia from codeine and others may have respiratory depression (2, 3).

Secondly, currently pharmacists have the monopoly of legally selling specific opioids in a compounded form to the public virtually unmonitored or unregulated without the use of a medical intermediary. This leads to a conflict of interests. Private discussions with employed pharmacists reveal that their employers may be very concerned at any potential reduction of sales volumes due to an employed pharmacist counselling the customer against the purchase. Furthermore there is a lack of privacy in pharmacies for potentially difficult conversations. It would be problematic for a pharmacist to have a structured ongoing assessment of pain outcomes and opioid risk behaviours in a busy public space. Drug addiction ranks highly in terms of degree of social disapproval or stigma in surveys of negatively moralized categories from around the world (4). It would be a rare pharmacist, or customer, who would risk such marginalisation by attending to a risk assessment or discussion of opioid-related behaviours. Other pharmacy customers may be aggrieved too. In a survey of 1,138 patients in GP waiting rooms, 39.3% reported high levels of discomfort concerning having to share a waiting room with someone receiving treatment for a drug problem (5). In a general practice setting, consultations are held in private single rooms, whereas this is a rare experience in pharmacy.

Thirdly, we see people who experience adverse outcomes from taking over-the counter (OTC) codeine not infrequently. Some of these may be very different in demeanour from the archetypal patient presenting for a methadone programme. We are able to provide case reports which include:

- An elderly lady with obsessive-compulsive disorder using high levels OTC codeine to relieve distressing thoughts;
- A lady in her early 60’s using OTC codeine to suppress unresolved grief;

- A woman in her 20‘s using codeine/ibuprofen doses sufficient to cause chronic gastric bleeding and multiple transfusions due to her haemoglobin dropping to 54.
- A young school teacher with chronic pain regularly consuming a packet of 24 at a time and blaming this for a subsequent car accident.

The danger for such people using or addicted to regular high-doses of opioids is that accessing compounded codeine also exposes them to potentially toxic or fatal levels of ibuprofen or paracetamol (6).

Fourthly, opioids are regarded as essential medicines by the World Health Organisation (7). They are crucial for acute or surgical pain and for terminal care. However the majority of their use is for chronic non-cancer pain. This indication is unsanctioned by quality evidence of their efficacy or safety (8, 9). Indeed the USA Food and Drug Administration recently reported, "The FDA is not aware of adequate or well controlled studies of opioid use longer than 12 weeks" (10). A recent guideline from the Hunter Integrated Pain Service stated, “Opioid therapy is not indicated for long term use in chronic non-cancer pain based on current evidence.”

For these reasons we support the proposed regulatory restrictions on access to opioid analgesics, particularly for codeine, which may include codeine’s re-scheduling to an S4 medication. The current scheduling structure deters pharmacists from refusing to supply opioids regardless of whether or not they feel compromised or pressured. The TGA can thus make it easier for health care providers to protect people from opioid-related harms.

Signed

[redacted]

[redacted]

[redacted]

[redacted]

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FPM
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May 7, 2015

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AUSTRALIAN AND NEW ZEALAND
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Dear Dr Brent

RE: Codeine - Public Consultation on proposed amendments to the Poisons Standard

Thank you for the opportunity to provide comment upon the proposed amendments to the poisons standard. As you would be aware, the Faculty of Pain Medicine of the Australian and New Zealand College of Anaesthetists is the body responsible for the education, training and continuing professional development of specialist pain medicine physicians in Australia. The Faculty promotes appropriate prescribing for pain relief through its professional documents which are publicly available from http://www.fpm.anzca.edu.au/resources/professional-documents.

The Faculty strongly supports the deletion of codeine from schedule 3 and rescheduling to schedule 4 due to potential issues of morbidity, toxicity and dependence while being of limited analgesic benefit. This reclassification would be consistent with classification countries such as the United States, Sweden and Germany where all codeine containing preparation require prescription by a medical practitioner.[1]

1. **Adding low dose codeine to non-opioid analgesics provides little additional analgesic benefit**

Codeine (methylmorphine) is in practical terms an inactive prodrug of morphine, which requires metabolic conversion to morphine by Cytochrome P450 2D6 to be an active analgesic [2]. Codeine on its own is a poor analgesic; 12 patients need to be treated for one to achieve a 50% reduction in post-operative pain with a single 60 mg (NNT 12)[3]. While the combination of codeine with non-opioids such as paracetamol or ibuprofen

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[1] Star investigation: Canada's invisible codeine problem http://www.thestar.com/news/canada/2015/01/17/star-investigation-canadas-invisible-codeine-problem.html [accessed April 24, 2015].

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enhances the analgesic efficacy of these non-opioids, this requires combinations containing typically paracetamol 500 mg with codeine 30 mg per tablet such as in Panadeine forte™, already now a Schedule 4 drug.

2. **Ibuprofen 200mg/paracetamol 500mg OTC combinations provide increased analgesic benefit with less risk to the community.**

A number of studies have now identified that combinations of ibuprofen plus paracetamol provide superior analgesic efficacy to OTC codeine combination analgesics. One study and a meta-analysis reported that 1 or 2 tablets of a single-tablet combination of ibuprofen 200 mg/paracetamol 500 mg were statistically significantly more efficacious than 2 tablets of paracetamol 500 mg/codeine 15 mg. Two tablets offered significantly superior pain relief to ibuprofen 200 mg/codeine 12.8 mg (P = 0.0001), and 1 tablet was found noninferior to this combination [4]. This combination would continue to provide a good and safe OTC analgesic if codeine containing preparations would be rescheduled to Schedule 4 without the issues associated with opioid-containing analgesic combinations outlined below.

3. **Dependence on OTC codeine analgesics is a significant concern and can cause serious, sometimes life-threatening adverse effects due to the combination with paracetamol or NSAIDs**.

National and international media have focused attention on the significant and damaging impacts of codeine dependence on the community through featuring individual stories of the effects of codeine[5][6][7].

The dependence on and abuse of codeine containing combination preparations leads to significant organ toxicity due to the resulting consumption of excessive overdoses of the non-opioids paracetamol and ibuprofen in these combinations.

With regard to paracetamol, use of paracetamol containing codeine preparations exceeds the safe threshold of 4 g paracetamol in many abusers with high risk of liver toxicity of the excessive paracetamol doses consumed[8].

With regard to ibuprofen, [redacted], has collated an extensive list of studies and reported cases of impacts life threatening hypokalaemia from renal tubular acidosis as well as non-healing gastric ulcers unresponsive to treatment as a direct result of codeine abuse from 2008 through 2015 (appendix 1).

The current listing of codeine containing combinations with non-opioids as a schedule 3 drug is failing to protect the Australian community from the harmful side effects of these combination preparations with marginal analgesic benefit.

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4. **Good evidence now demonstrates that under current arrangements (Schedule 3 Pharmacist Medicine) there is a substantial level of harm from the easy and widespread availability of these opioid medicines.**

Surveys of pharmacists and codeine dependent people seeking OTC codeine describe a number of themes about the difficulty of managing the safe supply of OTC codeine analgesics [9] [10] [11]. It is unreasonable to expect a pharmacist will be able to detect codeine dependence based solely on a customer's appearance.

Thank you for the opportunity to provide feedback. Should you require any further information, please contact [redacted]

Kind Regards

[redacted]

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ATTACHMENT 1. Published cases (247 cases) of NSAID harm arising from misuse of OTC codeine-ibuprofen analgesics: Australia and New Zealand, 2008-2014.

Authors (country)	No. cases. No. tablets/day	Description.
Dobbin & Tobin, 2008 [1] (Australia)	77 cases Average 50 tablets per day for an average of 2.5 years	Drug dependence on codeine with serious complications of **upper gastrointestinal toxicity (haemorrhage and perforation of the stomach and duodenum), anaemia, renal tubular acidosis, hypokalaemia and one death**. Many patients needed **life support in intensive care**, as well as emergency surgery. Average age was 33 years, and an equal representation of males and females.
Dutch, 2008 [2] (Australia)	2 cases pack/day, and 16-24/day (Nurofen Plus)	Two cases of **perforated gastric ulcers** attributed to recreational codeine-ibuprofen use. One case required **intensive care unit**, the other 4 units of packed blood cells.
Frei et al, 2010 [3] (Australia)	27 cases mean 34-47/day OTC codeine-ibuprofen	A case series of patients with serious and often multiple NSAID pattern morbidities such as **GI haemorrhage and perforation, pyloric stenosis, renal failure, anaemia and profound hypokalaemia, as well as opioid dependence,** resulting from high dose OTC codeine-ibuprofen misuse obtained from multiple pharmacies over a prolonged period. Some with multiple admissions. Most had no previous history of substance use disorder, with most initiating for self-medication of pain. **Four admitted to ICU**. One required **dialysis**. One **gastrectomy**. Most required pharmacotherapy for opioid dependence.
Ernest D, Chia M, Corallo CE. 2010 [4] (Australia)	2 24/day for 3 days (Nurofen Plus)	**Profound hypokalaemia and rhabdomyolysis** presenting as severe quadriparesis, from overuse of Nurofen Plus with energy drinks**. ICU admission**. Partner also admitted for **detoxification** from Nurofen Plus.
Robinson GM, Robinson S, McCarthy P, Cameron C. 2010 [5] **(New Zealand)**	**7** **Nurofen Plus 60-80/day, 48/day, 20/day, up to 72/day, 80/day, up to 120/day, 48/day**	**Cases of long term high dose Nurofen Plus misuse with severe multiple NSAID pattern morbidities (gastric ulcer and haemorrhage, anaemia, gastrectomy, ileal resection, inflammatory bowel disease with gastric bypass and colectomy), Four cases had co-morbid alcohol use disorders, four cases with mental health disorders.**
Evans C, Chalmers-Watson TA, Gearry RB. 2010 [6] (New Zealand)	Describing 1 of 4 cases. > 100 tabs/day	Presented with anaemia, lower leg oedema and epigastric pain. **Gastric ulcer** with **active bleeding** in pyloric channel and **post-bulbar duodenitis with active bleeding.** Balloon dilatation of **pyloric stenosis** later required, and he was treated for **addiction**. He was one of four patients presenting to the service in 2 years with **significant GI pathology** secondary to gross overuse of combination NSAID/codeine products.
Ali A et al. 2010 [7] (Australia)	1 60-80 Nurofen Plus tablets/day for many months	**Renal tubular acidosis** and **hypokalaemic paraparesis**

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Miles R et al. 2010 [8] (Australia)	1	**Acute Tubular Necrosis** and **Renal Tubular Acidosis**
Storor D. 2011 [9] (Australia)	56	Opioid dependence on OTC codeine analgesics. **Gastritis, peptic ulcer, scarring and strictures, intestinal obstruction and renal failure**. Some required **blood transfusions**. **Hepatitis** from paracetamol.
Ng JL, Morgan DJR, Loh NKM, Gan SK, Coleman PL, Ong GSY, et al. 2011 [10] (Australia)	2 up to 20 tabs/day, and 24 tabs/day (codeine-ibuprofen)	Four cases of **profound hypokalaemia** associated with excess ibuprofen intake. Two of the cases involved codeine-ibuprofen. One had a history including **iron deficiency anaemia**, **chronic constipation**, migraines, depression and previous intravenous drug use. She was taking up to 20 tabs/day and was admitted with **evolving paralysis** and **profound hypokalaemia**, **renal tubular acidosis**, **oesophageal erosions** and **gastric ulcer**. The other had been taking 24 tabs/day of OTC codeine-ibuprofen for several years and presented with **progressive muscle weakness** and hypokalaemia. Opioid withdrawal symptoms on day 3.
Page CB, Wilson PA, Foy A, Downes MA, Whyte IM, Isbister GK. 2011 [11] (Australia)	4 OTC codeine-ibuprofen. Tablets /day 45-90, 25, 40 and unclear but years' duration.	Four cases of **life-threatening hypokalaemia** and ibuprofen-induced **renal tubular acidosis** from long-standing misuse of ibuprofen taken in combination with codeine from over-the-counter (OTC) medications. Two patients **required ICU admission**. Opioid addiction appeared to be the common thread.
McDonough MA 2011 [12] (Australia)	32	Cases referred to one addiction medicine service, all with a history of chronic pain and combination codeine-analgesic use. One 34yo male reported taking more than 70 codeine-ibuprofen tablets daily and sustained **recurrent gastric ulceration** eventually requiring surgery. Despite this he continued to misuse the analgesics and undertook opioid replacement pharmacotherapy. Some cases had severe morbidity including one death from **gastric ulceration**.
Mallett A, Lynch M, John GT, Healy H, Lust K. 2011 [13] (Australia)	1 OTC codeine-ibuprofen. Tablets /day 45-90, 25, 40 and unclear but years' duration.	34-year-old woman in third trimester of pregnancy presented with **renal tubular acidosis** related to ibuprofen codeine abuse. Delivery at 37 weeks was necessary because of concerns about evolving preeclampsia**. Renal tubular acidosis** and **hypokalaemia** were mitigated, but **some renal dysfunction** continued.
Karamatic R, Croese J, Roche E. 2011 [14] (Australia)	3 OTC codeine-ibuprofen. Tablets /day 10, 10-12, and 20 tablets a day, in two cases for 5 years or more.	3 cases of **small bowel NSAID enteropathy**, including **diaphragm disease** and **small bowel ulceration**, all of whom had **iron deficiency anaemia** and **hypoalbuminaemia**.

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McAvoy BR et al. 2011 [15] (New Zealand)	15 cases over a 12 week period OTC codeine-ibuprofen average 49 per day for average 27 months	**Gastrointestinal bleeding**, dyspepsia in 53%. **Renal tubular acidosis** in 7%.
Lake H. 2013 [16] (Australia)	1 up to 90/day codeine-ibuprofen	Worsening abdominal pain, **bowel obstruction**. **Small bowel resection. Fibrous stricture.** Delirium and multiple code black interventions - aggressive and violent behaviour.
Pilgrim J, Dobbin M, Drummer OH. 2013 [17] (Australia)	7	Coroners' cases with codeine and ibuprofen detected in post-mortem toxicology, or where codeine–ibuprofen analgesic misuse was described in coroners' findings. 115 cases were identified, and evidence of chronic NSAID toxicity was reported in 7 cases manifesting as **gastric erosions and ulceration** in three individuals, **chronic gastritis** in one, **renal necrosis** and disease in two and **hepatocyte necrosis** in one.
Robertson CG, Kumar B, Bright T, Watson DI. 2014 [18] (Australia)	5	Five young patients with unrecognised NSAID abuse referred with **non-healing gastric ulcers** with or without **perforation** or **gastric outlet obstruction**. Four patients did not volunteer NSAID use until confronted with positive NSAID urine tests. Complex issues during recovery followed surgical intervention.

Prepared by: [redacted]

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Therapeutic Goods Administration; Submission concerning Advisory Committee on Medicines Scheduling
7 May 2015

A private individual submission by Laurence E Mather PhD, FANZCA, FRCA, Emeritus Professor of Anaesthesia, The University of Sydney

Dear Delegate

I have become aware through the lay press of the proposal for reclassification of analgesic preparations containing codeine and have been trying, unsuccessfully, to find specific documentation on the TGA website concerning the rationale for this proposal. The only source that I could find was this:

1. Proposed amendments referred by the delegate for scheduling advice for consideration by the Advisory Committee on Medicines Scheduling (ACMS).
Codeine. To delete the Schedule 3 entry for codeine, and reschedule the current Schedule 3 codeine entry to Schedule 4 due to potential issues of morbidity, toxicity and dependence.

I wish to make a brief submission to your Committee concerning this proposed amendment. Due to my inability to find the exact rationale for this proposal, I cannot address the particular concerns of the TGA. I thus comment more generally, and have set out this submission as a statement of my relevant qualifications and disclosures, and a statement of my position.

My *qualifications* and *disclosures* in support of this submission are those of a now-retired chemical and clinical pharmacologist with over four decades of academic research and teaching in the disciplines of anaesthesia and pain medicine. Since retirement, I have maintained a reasonably current knowledge of my disciplines, and have made various recent Parliamentary submissions and professional journal and lay press commentaries about 'medicinal cannabis'. I have no financial interests in the outcome of this or any other inquiry concerning codeine-containing medications.

My *position* is that I oppose this amendment, as far as I understand it; that is, I am assuming that the focus of this proposal is changing the scheduling from S3 to S4 of fixed-dose analgetic agent combinations containing small-doses of codeine as a codeine salt, commonly codeine phosphate in doses of 8 to 15 mg.

I perceive that the present proposal follows on from expert group reports available to the TGA, and from public domain publications reporting that over-the-counter codeine-containing preparations produce significant morbidity in users, as well as providing a source of codeine for use by people who inject drugs.[1] However, in reading such publications, I am conscious of poor interpretations of the pharmacology that have apparently contributed to the reported conclusions, as well as the focus on the adverse effects in a tiny minority of users compared to the beneficial effects in the vast majority of users.

[1] Some examples include: Frei, M. Y., Nielsen, S., Dobbin, M. D., & Tobin, C. L. (2010). Serious morbidity associated with misuse of over-the-counter codeine-ibuprofen analgesics: a series of 27 cases. Med J Aust, 193(5), 294-6; McAvoy, B. R., Dobbin, M. D., & Tobin, C. L. (2011). Over-the-counter codeine analgesic misuse and harm: characteristics of cases in Australia and New Zealand. NZ Med J, 124(1346), 29-33; Tobin, C. L., Dobbin, M., & McAvoy, B. (2013). Regulatory responses to over□the□counter codeine analgesic misuse in Australia, New Zealand and the United Kingdom. Australian and New Zealand journal of public health, 37(5), 483-488.

Notably, I read concerns deriving from statements such as ‘codeine is a pro-drug of morphine’. Indeed it is, but the metabolism of codeine to morphine is a minor pathway. Although codeine has a long history of use in Western medicine, its pharmacology is reasonably complex. Codeine, itself, in various relevant pharmacological models is 1/5 to 1/10 as active as morphine. It was recognized in the 1960s that codeine was, in small parts, metabolized to morphine and norcodeine, and in major part to codeine-6-glucuronide. All of these metabolites probably contribute to the effects of codeine. Research from the 1980s indicated that its metabolism to morphine, along with its analgetic activity, occurred partly in the brain, and that these were natural products, albeit in minute amounts, in the mammalian brain. Also in the 1980s, research indicated that the metabolism of codeine was genetically mediated and that ‘extensive metabolizers’ obtained analgesia but that ‘poor metabolizers’ did not. Research from the 1990s suggested that ‘ultra-fast metabolizers’ might be subject to greater adverse effects from codeine. Although important information, this research has had scant impact on the clinical use of codeine. Most people or their medical consultants have no idea about their genetic phenotype and whether they ought to obtain benefit from codeine medications or otherwise.

And again, notably, I read concerns over the use of fixed dose combinations and the inability to ‘separately titrate the doses of the individual agents’. Again, this is so, but such criticism was being put to fixed-dose combinations in my student days some 50 years ago. Even in those days, we knew that it was important only where there are large disparities in the pharmacokinetics of the components, and this is not the case with such combinations of codeine with the common nonsteroidal antiinflammatory drugs or paracetamol. However, of course, in this case the single analgetic medication preparation is also available and there are no low dose codeine single medications.

All of the claims of harms fail to recognize the legitimate use of these agents – to relieve pain. Foremost, it has become an accepted principle of contemporary pain management that combinations of analgetic substances in smaller doses are frequently found to be more efficacious than larger doses of a individual substance: this is the principle of ‘multimodal analgesia. The main benefits of this approach are plain: first, different analgetic agents with different modes of action are typically complementary – being additive or even synergistic; second, there is typically a reduction in necessary dosage of the separate agents, thereby reducing the probability of adverse effects from those agents; third, the convenience of dosage regimens may be enhanced by the combination treatment, thereby enhancing patient compliance and the probability of successful treatment.

Pain is a very common sensation: it is a warning system to alert the individual of the need to protect their self from further injury, but it usually has nuisance value so that relief is also desired. Most pain is minor and/or self-limiting, does not require medical consultation, and is amenable to relief by convenient self-medication. Community provision of analgetic agents for the self-treatment of pain is essential. The range of analgetic agents available for self-medication is remarkably small, consisting principally of paracetamol and a small range of nonsteroidal antiinflammatory drugs, either alone or in fixed-dose combinations with small-doses of codeine.

There is presently a particular perceived problem of over-use of opioid medications, in general, although there is also a more significant known problem of many people not receiving adequate management of their pain. Society is currently on a ‘swing’ from the ‘tight-fisted analgesia’ conservative period of the previous generation to another conservative ‘swing’ about over-use in the present generation. I add that the concern about over-use derives mainly from the

introduction of numerous extended release profile oral and other preparations of opioid analgetic agents in much larger doses. I also point out that non-codeine combination analgetic agents of previous generations also brought more serious adversity, to wit, renal papillary necrosis from aspirin-phenacetin-caffeine combinations of even earlier generations.

Codeine, alone, in the doses used in common low dose combinations is not a particularly effective analgetic agent (and hardly exerts any significant pharmacological effects in adult humans). Much larger doses are required for relief of medium-strong intensity pain (such as from dental extractions, etc.) in adult humans. Indeed, the efficacy of codeine in low dose combinations with a standard dose of nonsteroidal antiinflammatory drug such as ibuprofen or with paracetamol is found to be equivocal in most standard randomised group trials. Nevertheless, many individuals treated with the two forms claim greater benefit from the combination. Despite all of this, pain, being entirely a subjective sensation, is treated individually, regardless of the mechanism, and whether the use of an analgetic agent preparation with or without codeine relieves that pain is immaterial in the vast majority of cases.

I don't know the statistics of community use of S3 codeine-containing preparations, but I am less pharmacologically-concerned about the over-use of the codeine component than I am about any adverse effects form the nonsteroidal antiinflammatory drug or paracetamol component, to wit, gastrointestinal and/or renal problems. I believe that the community should have the availability of S3 preparations containing low-dose admixed codeine – in the vast majority of cases it is more likely to be of little use than of harmful use. There will always be the opportunity for people who inject drugs to use low dose codeine-containing analgetic preparations as a source of codeine, and if not codeine, then something else. However, the benefits to people who need such a ready preparation for legitimate purposes should have a higher priority than attempting to restrict those who use these preparations for illegitimate purposes. As for the propensity for harm from low dose codeine containing preparations, I maintain that the harm is more likely to come from the non-codeine component that ultimately may have to be used in greater doses to obtain pain relief.

END OF SUBMISSION

RESPONSE TO THE THERAPEUTIC GOODS ADMINISTRATION PROPOSAL TO RE-SCHEDULE CODEINE COMBINATION PRODUCTS FROM PHARMACIST ONLY (S3) TO PRESCRIPTION ONLY MEDICINES (S4)

PLEASE NOTE – ALL SECTIONS HIGHLIGHTED WITH A GREY BACKGROUND ARE COMMERCIAL-IN-CONFIDENCE AND SHOULD NOT BE DISCLOSED

BACKGROUND

Codeine is an opioid analgesic that works in the brain and spinal cord to relieve pain[1]. Presently over-the-counter codeine combination products are available as Pharmacist Only medicine (S3) as an analgesic and Pharmacy Only medicine (S2) as a decongestant.

Alphapharm has five codeine combination products included on the Australian Register of Therapeutic Goods as over-the-counter (OTC) medicines, four are Pharmacist Only (S3), and one is Pharmacy Only (S2).

The scope of this submission will focus on the four brands of codeine combination products that are Pharmacist Only medicines (S3).

RECOMMENDATIONS

Alphapharm does not support the proposal to reschedule OTC codeine-containing products from Pharmacist Only (S3) to Prescription Only medicines (S4).

Our view is that the current scheduling arrangement applied to this class of medicines provides an appropriate level of control over access and availability of the medicines without unnecessarily restricting access to the vast number of patients who use them appropriately.

When used as directed, which is by the majority of the population, these medicines have a very good safety profile.

We believe that the proposal to reschedule the medicines will increase both the financial and administrative burden on the healthcare system in prescribing simple analgesics.

Furthermore, we are not convinced that rescheduling the medicines will offer a greater disincentive to those consumers intent on misusing or abusing them, than that currently provided by Pharmacist Only status.

THE RISKS AND BENEFITS OF CODEINE COBINATION PRODUCTS

OTC codeine combination products have been demonstrated to have more effective analgesic properties than their non-codeine containing counterparts[2,3] .They provide temporary relief from mild to moderate pain cause by a wide range of indications. [1]

When used as directed, the medications are generally well tolerated, with common side effects including gastrointestinal upset, nausea, heartburn, drowsiness, dizziness rash and constipation. [1]

Level of abuse seen with these medicines

According to the 2013 National Drug Strategy Household Survey[4], 3.3% of the Australian population >14yrs of age had misused* pain-killers/analgesics in the past 12 months. This equates to approximately 600,000 people, increasing from 550, 000 people in 2010. OTC pain-killers (78%) were more commonly misused than prescription pain-killers (51%).

Other findings include:

- Paracetamol (51%) was the most common type of over-the-counter pain-killer used, followed by ibuprofen and codeine combination product medications (33%)
- the most commonly used prescription pain-killer was a codeine and paracetamol combination product (29%), which contains a higher dose of codeine than over-the-counter products
- both males and females were more likely to have used over-the-counter pain-killers than prescription pain-killers.

*Misuse relates to use for non-medical purposes, which may include using medication in doses or frequencies other than those prescribed.

Side Effects reported [8]

There were only four adverse events reported to Alphapharm for OTC codeine combination products during 2010-2015. Two of these cases were serious literature reports and were sent to the Therapeutic Goods Administration (TGA).
The adverse events reported were:

1. Rash [2012]
2. Prickly skin, itchiness, heated skin, rash, face swelling, lupus flare-up [2012]
3. Patient experienced delirium, chronic overdose, withdrawal symptoms, small bowel obstruction, analgesic abuse, and analgesic drug dependence. [2014 literature case]
4. Drug toxicity, drug abuse [2014 literature case]

Table 1- Reported Adverse Events 2010- present

Drug	Generic Name/ strength	Pack Size	Internal Reported Adverse events 2010 -2015	TGA Reported events 2010-2015
Product 1	Codeine+Doxylamine+ Paracetamol 450mg/9.75mg/5mg tab	20	0	0
Product 2	Codeine+Paracetamol 500mg/8mg tab	24	0	0
Product 2	Codeine+Paracetamol 500mg/8mg tab	48	0	0
Product 3	Codeine+Paracetamol 500mg/15mg tab	12	0	0
Product 3	Codeine+Paracetamol 500mg/15mg tab	24	0	0
Product 3	Codeine+Paracetamol 500mg/15mg tab	40	0	0
Product 4	Codeine+Ibuprofen 200mg/12.8mg tab	30	4	2

Table 2- Total pack sizes sold of codeine combination Over the Counter Medicines from IMS data 2010- March 2015

Drug Name	Pack Size	Total Domestic Sales 2010-2015
Product 1	20	425,731[1]
Product 2	24	636,966
Product 2	48	7,035[2]
Product 3	12	32,981 [3]
Product 3	24	181,232 [4]
Product 3	40	56,600 [5]
Product 4	30	1,597,444 [6]

[1] product marketed from 2011
[2] pack size discontinued in 2011
[3] pack size marketed from 2013
[4] pack size marketed from 2013
[5] pack size marketed from 2014
[6] product marketed since 2011

The number of adverse events reported were very small compared with the number of packs sold.

Burden on the healthcare system

The up-scheduling of codeine containing products from Schedule 3 Pharmacist Only to Schedule 4 Prescription Only will result in a greater number of visits to the general practioner (GP) for simple analgesic scripts.
Points of serious concern resulting from this are:

- Increased cost to patients who do not have access to bulk billing practices.
- increase of the overall wait period for all patients to see a GP.
- potential reduction in the quality of care patients receive from their GP, as the GPs struggle to manage an increase in patients.

Further to this, the proposed change will also be placing a significant administrative burden associated with the prescribing and dispensing of the medicines, as well as placing financial burden on the healthcare system.

Difficulty with storing OTC codeine containing products behind the dispensary

There is limited dispensary space in pharmacy to store all codeine containing products, in particular with small pharmacies.
It is Alphapharm's belief that the up-scheduling of codeine combination products will place a financial burden on pharmacies: they may have to extend their dispensary area to accommodate the additional stock thus reducing front of shop space. This will have a particularly large impact on small pharmacies already struggling to compete with large chain pharmacies.

Up-scheduling does not eradicate potential for abuse

This is seen with many drugs including opioid analgesics, which are categorised as S4 and S8.

- In Australia between 1997 and 2012, oxycodone and fentanyl supply (both S8s) increased 22 fold and 46 fold respectively [9]
- In Australia pharmaceutical opioid abuse is increasing. Leong (2009) [10] found that the number of prescription opioids supplied in Australia has increased substantially since 1992-2007, particularly since 2000.
- In the United States, where all codeine containing products are prescription only, mortality numbers due to prescription analgesic overdoses have increased, with the number of deaths now exceeding those caused by cocaine and heroin/morphine [11]

Other ways that could help reduce the risk of codeine dependence with OTC codeine containing products

Considering the insidious nature of addiction, it would be more beneficial to patients to create greater awareness about the potential for opioid dependence, rather than try to stop it once it has already occurred.

The pharmacist can play an important role in raising general awareness regarding potential OTC codeine dependence and harms. Greater interaction between pharmacists and the public during OTC codeine purchases may go a long way towards improving the effectiveness of pharmacy responses to OTC codeine dependence [12].

Ideally, increasing the level of pharmacist involvement by helping pharmacists to better identify and deal with codeine dependant patients and have a better role in informing patients about the risk of codeine dependence [12] (The preceding sentence is incomplete)

Other ways of helping reduce the risk of OTC codeine dependence could include analgesics having warning labels on them about the risk of dependence and/or having a consumer information leaflet with further description of addiction and the symptoms to look out for, readily available for all OTC codeine containing products [12].

Conclusions

Concerns regarding dependence and abuse potential with OTC codeine containing products can be largely limited by ensuring careful supply of the medicines by pharmacists. This includes providing proper counselling to patients on side effects and the potential for dependence, and appropriately selecting which patients are the most likely to benefit from these agents and avoiding them in patients who have a history of abuse or are addiction prone [12].

Providing additional support to pharmacists in raising general awareness regarding potential OTC codeine dependence and harms, as well as encouraging greater interaction between pharmacists and the public during OTC codeine purchases may go a long way towards improving the effectiveness of pharmacy responses to OTC codeine dependence [12].

Up-scheduling OTC codeine containing products may lead to an increased burden, both administrative and financial, on the healthcare system and on patients. Requiring scripts for common, low dose pain killers will increase the number of patient GP visits and cause longer wait periods in GP offices.

Although there is a need for the careful supply of OTC codeine containing products, we do not believe that rescheduling OTC codeine containing products to Schedule 4 will reduce the relatively small amount of abuse seen with these drugs.But it will make it more difficult to access them for the overwhelming majority of patients who use them appropriately, conservatively and responsibly.

References:
1.Alphapharm Product Information Leaflet for for Codapane, Codapane extra, Codagesic, Rafen Plus
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11. Paulozzi LJ, Budnitz DS, Xi, Y (2006) Increasing deaths from opioid analgesics in the United States. Pharmacoepidemiology and Drug Safety, 15 (618-627)
12.Neilsen S, Cameron J, Pahoki S. 2010. Turning Point (Alcohol and Drug Centre) Over The Counter Codeine Dependence. http://atdc.org.au/wp-content/uploads/2011/02/OTC_CODEINE_REPORT.pdf

From: [redacted]
Sent: Thursday, 7 May 2015 3:22 PM
To: Medicines Scheduling
Cc: keri. alexander
Subject: Proposed Amendments to the Poisons Standard (Medicines) - codeine

To whom it may concern,

We, members of [redacted], working in each of the major teaching hospitals in Victoria, write to support the proposal to To delete the Schedule 3 entry for codeine, and reschedule the current Schedule 3 codeine entry to Schedule 4 due to potential issues of morbidity, toxicity and dependency.

We are concerned because we have seen major medical complications from patients who have become addicted to these agents. Some patients may take up to 80 tablets of these over-the- counter medications a day. If they take ibuprofen they can get stomach an duodenal ulcers which can cause severe iron deficiency anaemia, and even bowel perforation and death. They can suffer from kidney failure requiring dialysis, and low potassium levels which may lead to abnormalities of heart rhythm which may be fatal. If they take paracetamol combined codeine compounds's they are at risk of liver damage due to the paracetamol. A common theme from these patients is a history of being introduced to such medication for pain, then rapidly becoming addicted. Most have no other history of illicit drug use, and have been hiding their addition from those around them. Many are employed, but spend a huge amount of time travelling between pharmacies, often many hours each week. Their tolerance to codeine increases, so they require escalating doses to achieve the desired effect, or, eventually, to prevent codeine withdrawal.

The [redacted] is an independent health professional organisation of multidisciplinary health professionals working in the field of hospital based addiction medicine consultation liaison. Members are from hospitals throughout Victoria, but also represent the tertiary hospitals in Melbourne. Many of us are addiction medicine specialists, with Fellowship of the Australasian Chapter of Addiction Medicine (Royal Australasian College of Physicians), nurses and allied health professionals with many years of addiction medicine experience.

Some patients even require admission to detoxification programs, and many require maintenance pharmacotherapy (eg Suboxone or methadone program) for many months.

Yours sincerely,

[redacted]

[redacted]

Thursday 7th May 2015

Medicines Scheduling Secretariat
Therapeutic Goods Administration
136 Narrabundah Lane
Symonston ACT 2606
Australia

Dear Sir/Madam,

Re: Public Submission – under Reg. 42ZCZK of the Therapeutic Goods Regulations 1990. ACMS meeting, July 2015

Proposal to delete the Schedule 3 entry for codeine and reschedule the current Schedule 3 codeine entry to Schedule 4 due to potential issues of morbidity, toxicity and dependence. In addition to considering the appropriateness of Schedule 2 entry of codeine

[redacted] recognises the challenge of addiction to society; we are strongly opposed to the proposal to review the scheduling of codeine in cold and flu products for the following reasons:

1. The NDPSC determined in 2009/2010 that Schedule 2 for codeine containing cold and flu products was appropriate due to the differences in risks associated with cold and flu products versus analgesics. No evidence has emerged to suggest that the risk-benefit/Abuse/Misuse profiles have changed since this decision was made.
2. Cold and flu medicines containing codeine are responsibly used by millions of Australians appropriately opting for self-care of what are short-term, episodic and self-limiting conditions. The appropriate care setting for these treatments to be administered is community pharmacy;
3. There is no current or historical evidence of widespread abuse of cold and flu products containing codeine;
4. Retaining S2 codeine/phenylephrine combinations was a successful strategy for reducing the amount of pseudoephedrine in trade. Further restrictions on the availability of S2 codeine/phenylephrine combinations will negate this.
5. Restricted access to safe and effective codeine containing cold and flu products could drive people with colds and flus into general practice and emergency departments for access to care, will have the perverse consequences of a negative impact on the health budget at a time when over-utilization of medical services is very difficult to control and inappropriate use of antibiotics;
6. The potential for a significant consumer backlash given these products are widely used and the new care settings proposed (GP or ED) often involve a significant co-payment or waiting times.

XXX is the sponsor of both Pharmacist Medicines (S3) and Pharmacy Only Medicines (S2) that contain codeine, in combination with paracetamol and either pseudoephedrine (PSE) or phenylephrine (PE). These products are indicated for the relief of symptoms associated with colds and flu under the brand name of XXXXXX, a local brand that can only be found in Australia and New Zealand.

XXX is not a sponsor of analgesics and do not supply either single component or multi-component analgesics in Australia or New Zealand.

Executive Summary

In 2009, the now defunct National Drugs and Poisons Schedule Committee (NDPSC), voted to amend the scheduling of codeine containing analgesics from S2 to S3 based on evidence of inappropriate use. At its June and October 2009 meetings, the NDPSC confirmed that the Schedule 2 codeine entry pertaining to cold and flu products remained appropriate given there were no reports that use of these products was leading to misuse or abuse. A decision was reached maintain packs sizes equivalent to 6 days' supply and to review the scheduling cold and flu could medicines in 12 months, should evidence of misuse or abuse emerge. To date there has been no evidence of misuse or abuse in this category.

In a separate decision, all pseudoephedrine (PSE) products (including combination products) were scheduled to S3 for the distinct purpose of limiting access to PSE for illicit drug trade and conversion into methamphetamine.

Since these changes came into effect, data relating to the volume of individual packs of non-prescription analgesics and cold and flu products supplied through pharmacy clearly demonstrate that there has been no transfer of demand from non-prescription analgesics containing codeine to cold and flu products containing codeine. The now defunct NDPSC previously expressed a concern that this may occur when codeine containing analgesics were up-scheduled from S2 to S3; however, as noted, there has been no evidence that this has occurred.

XXX wishes to raise concerns regarding the unintended consequences of scheduling changes to cold and flu products with codeine should the NDPSC's previous decision be overturned. Importantly, these changes are likely to have negative economic impacts to the patient and the public health system by unnecessarily driving cold and flu sufferers into GP clinics (or emergency rooms) for symptomatic relief. This, in turn will increase the cost to the consumer of accessing cold and flu medicines and place undue pressure on the GP with extra patient load and potential for inappropriate antibiotic prescribing.

Furthermore, the up-scheduling of codeine-containing cold and flu medicines to S4 respectively, is likely to increase demand for the PSE formulated cold and flu products still available in Pharmacy. The result would be greater volumes of PSE in the market than we see today and greater pressures on both pharmacy and law enforcement to track sales.

Evidence provided in this submission clearly supports the notion that the current scheduling of cold and flu products with codeine is appropriate and that no new evidence has emerged since the scheduling decisions in 2009 and 2010. The evidence demonstrates that this is no case for the up-scheduling for codeine containing cold and flu products.

Cold and flu products containing codeine should be excluded from any consideration of measures aimed at addressing analgesic codeine combinations. No new evidence of inappropriate use has been identified in relation to these products. The concerns that the problem of abuse/misuse may have shifted to cold and flu preparations that contain codeine have been dispelled with the data provided within.

Inability to Assess the Evidence Provided in Support of a Schedule Change

XXX would like to highlight that parties with a vested interest in the scheduling of codeine have not been given an opportunity to review any evidence to suggest that there is an issue that warrants the up-scheduling of codeine, especially in relation to cold and flu products containing codeine. The proposal for a review of the scheduling provides the general public with no information in relation to the issue apart from a motherhood statement of ….. **"***due to potential issues of morbidity, toxicity and dependence*".

XXX would argue that this statement in and of itself reflects no new developments in patient safety data and that the scheduling of codeine containing medicines has always been based on the ingredient's known risk-benefit profile.

In the interest of procedural fairness, XXX believes that any evidence submitted in support of the up-scheduling proposal should be made publically available for consideration by interested parties. Comments to this effect were included in the [redacted] submission to the expert panel's review of the current medicine and medical device legislation.

XXX would like to request that the ACMS consider deferring any recommendation in relation to the scheduling of codeine and requests that all evidence relating to "*the potential issues of morbidity, toxicity and dependence*" are published in the public domain for critical analysis by those with a vested interest in codeine.

Interested parties cannot be reasonably expected to provide a considered and complete submission addressing any issues raised in the original proposal, without being given the opportunity to review the evidence.

Furthermore, given the impact on the consumer of up-scheduling a commonly used product i.e. driving them into a new care setting where a waiting time and a co-payment is possible, this change should be subject to a period of broad public consultation to avoid a justifiable consumer backlash. In addition,

the Department of Health and Aging has a public obligation to model the impact on the health budget as a result of driving people who currently self-care into General Practice and Emergency Departments.

XXX urges the ACMS to consider these additional obligations before making any changes to the current scheduling arrangements for codeine.

Primary Issue is Limited to OTC Codeine-Containing Analgesics

XXX has been led to (anecdotally) understand that the primary issue motivating the inclusion of a change to the schedules containing codeine on the ACMS agenda is the small number of reported cases of misuse of S3 analgesics that contain codeine. This misuse might result in severe adverse events (AEs), mostly gastrointestinal, renal or hepatic injury. These AEs are believed to be the result of excessively high doses of ibuprofen or paracetamol consumed as a result of drug seeking behaviour for the codeine content of these products.

Media reports on the 25th and 26th April 2015 stated that researchers at Monash University have reported an increase in codeine abuse. This was based on a letter to the editor of the Medical Journal of Australia authored by Pilgrim *et al* 2013[1] (Appendix 1). The work conducted by Pilgrim *et al*, looked at post-mortem results from the period of 1 January 2001 to 31 December 2011. The decision to up-schedule codeine containing analgesics became on the 1st May 2010, at which time there was a significant drop in sales/demand/supply of codeine containing analgesics. **This means that in the Pilgrim *et al* study, only 19 of the 132 months in the study period (14%) were covering the period in which the access to codeine containing analgesics were more restricted, raising questions over the validity of the recommendations in the letter.**

Further, the references cited by Pilgrim *et al* in support of the apparent increased abuse of OTC were published in 2010 and 2012, and these too would have been largely based on data collated prior to the enforced restricted access was in place with the up-scheduling of codeine containing analgesics.

To determine whether the up-scheduling of codeine containing analgesics has had a real impact, the work conducted by Pilgrim *et al* should be conducted again, on a national scale looking at data both pre- and post- the up-scheduling of codeine containing analgesics. This would give a true indication as to whether there is a trend of increased codeine abuse in Australia and whether the up-scheduling of codeine containing analgesics has been successful at addressing the issue.

Given the ramifications of further restrictions (discussed later), any recommendation should be based on real, evidence submitted in a peer-reviewed publication of the current situation and not data collected prior to the effective date of the former NDPSC's re-scheduling decision. It is bad policy to base a change of this potential magnitude on anecdotal evidence submitted around a small number of difficult cases.

[1] Pilgrim, Dobbin & Drummer (2013) Fatal misuse of codeine–ibuprofen analgesics in Victoria, Australia. MJA 199(5) 329

Again, XXX wishes to emphasise that excessive consumption behaviour towards cold and flu products containing codeine has not been reported, nor previously considered as a consumer risk issue, when the past NDPSC reviewed and deliberated on the appropriate scheduling of OTC codeine containing products in 2009/10.

2009/10 NDPSC Scheduling Decision of Cold and Flu Products

In 2009, the NDPSC confirmed that the S2 scheduling of codeine-containing cold and flu products was appropriate. For reasons previously stated regarding the S3 scheduling of PSE products, this decision was made on the proviso that phenylephrine (PE) was always included in the formulation.

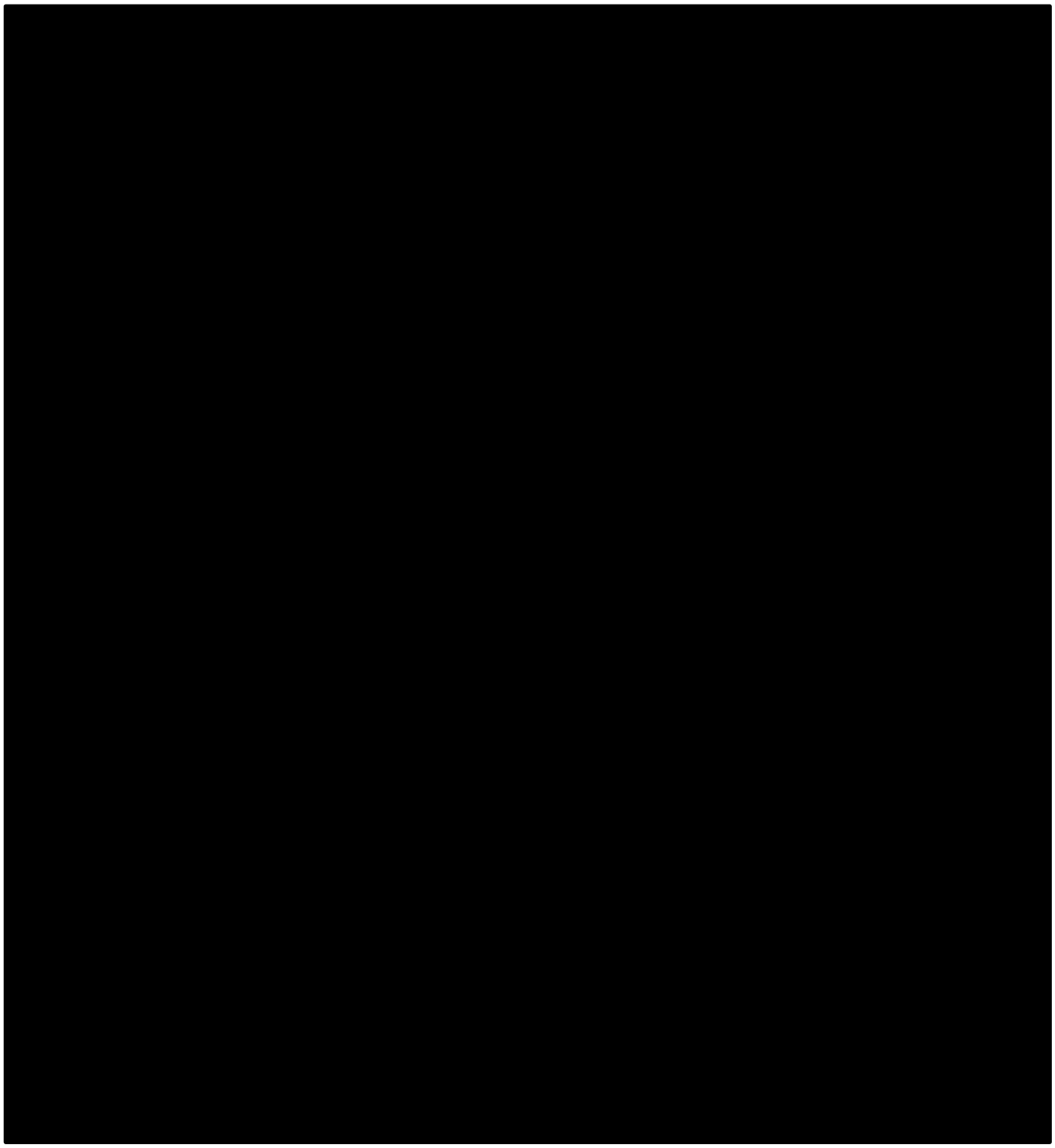
Pack sizes were maintained at no more than 6-days' supply based on status quo at the maximum dose recommended on the label allowing for a family pack size of 48 tablets. This pack size was deemed to be appropriate by the panel members as it was recognised that colds and flu are easily transmitted among household members.

Main reasons why the continued S2 listing of codeine-containing cold and flu products was deemed appropriate by the NDPSC:

1. Symptoms of pain can be acute and or chronic, potentially leading to long-term use of OTC analgesic products. Conversely, symptoms associated with colds and flus are episodic and self-limiting, therefore unlikely to lead to inadvertent codeine addiction. Consumers are less likely to dose escalate or self-treat with cold and flu products for extended periods of time, mitigating any potential for misuse as is reported with codeine-containing analgesic products.
2. Cold and flu products containing codeine often have multiple therapeutically-active ingredients and these, together, might diminish abuse/misuse.
3. Reported misuse of cold and flu products containing codeine is extremely rare and no submissions asserted that there was evidence indicating a problem.
4. Evidence was provided suggesting that when PE codeine combinations are not available (due to an out of stock situation, for instance), pharmacy sales of PSE products escalated. The continued availability of PE/codeine-combination products as S2 was considered appropriate given the major concerns relating to the illicit diversion of pharmacy-originated PSE.

The concern of PSE diversion into methamphetamine remains current.

[redacted]



Monitoring of S2 Codeine-Containing Cold and Flu Products

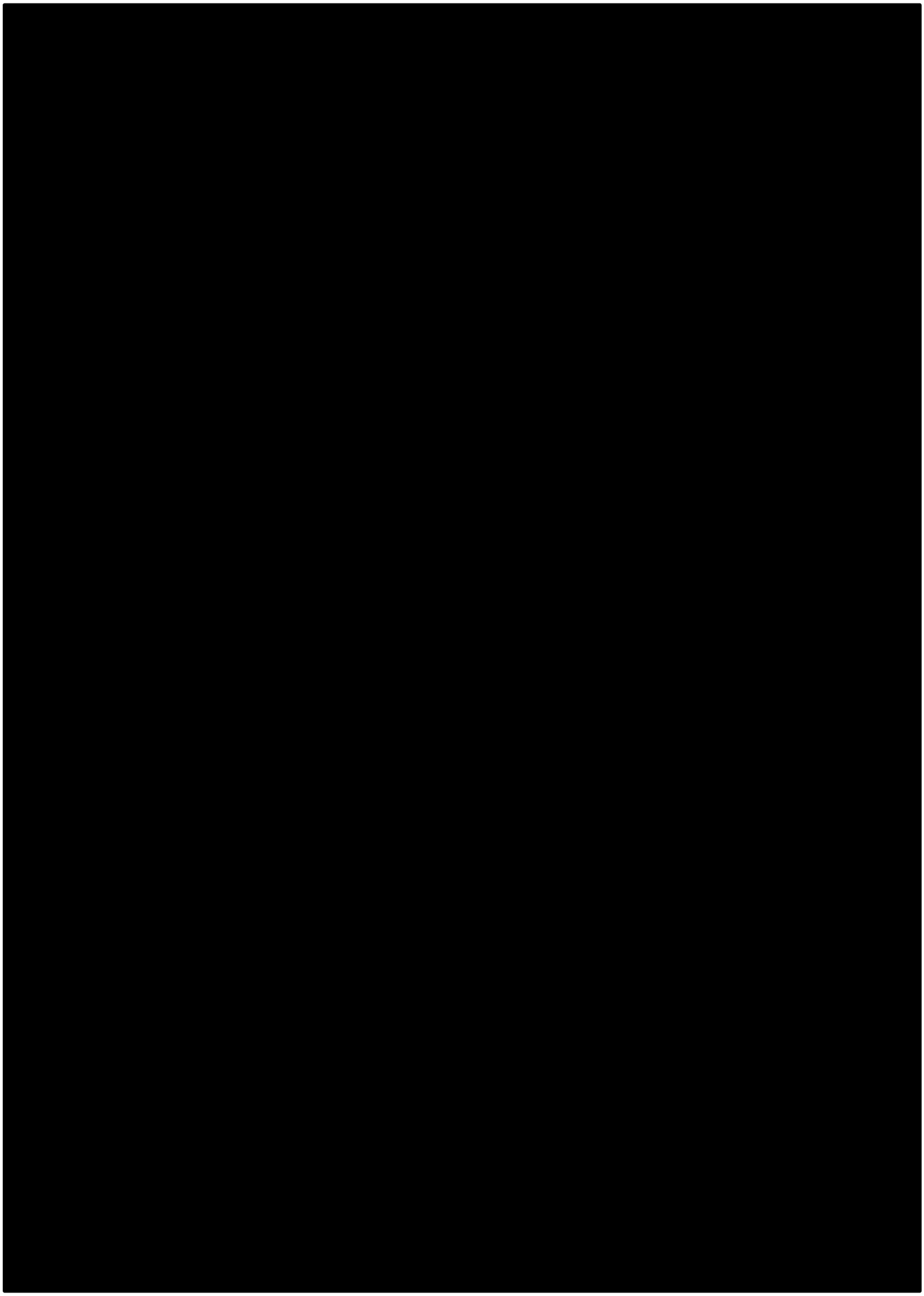
When the former NDPSC confirmed the S3 scheduling of codeine-containing analgesics, questions were raised over whether this would potentially lead to a surge in demand for S2 codeine-containing cold and flu products. It was noted by the NDPSC that this should be monitored.

The NDPSC was disbanded after the scheduling decisions were made for codeine and as a result, no formal requests were ever made to revisit the issue.

However, acknowledging its role as a major supplier in the cold and flu category, XXX decided to proactively monitor for any resulting changes to the demand of codeine containing cold and flu products in both Australia and New Zealand. In both 2014 and 2015, the Australian data was voluntarily shared with the TGA and with the Chief Pharmacist of the NSW State Department of Health. Data specific to New Zealand will similarly be shared with Medsafe and other key stakeholders (June 2015). There are plans for XXX to share its data more widely with other key stakeholders.

Both the national and state data conclusively demonstrates that there is **no relationship between the fall in supply/demand of non-prescription codeine-containing analgesics and the demand for cold and flu products containing codeine**. There has been no unexplained increase in demand for these products. In fact, demand has remained relatively flat, with slight seasonal variances which is dependent on the severity of the cold/flu season. The data for New Zealand also shows similar trends in the demand for codeine-containing cold and flu products (New Zealand re-classified codeine containing analgesics at a similar time to Australia).

This clearly shows that the NDPSC decision to differentiate and exclude the S2 cold and flu products with codeine from up-scheduling in 2009 was appropriate, and currently remains appropriate.



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Unintended Consequences Relating to Rescheduling of Cold and Flu Products with Codeine

Increase of Pseudoephedrine in Pharmacy & Supply Chain

In the situation where PE products with codeine are rescheduled to S3, both PE and PSE products would be required to be stored behind the dispensary and supplied only upon consultation with the pharmacist. This would have the effect of a three-fold increase in the volume of product stored behind the counter - based on 2014 figures, an additional 4.7 million packs (all brands, not just XXX brands).

With both PE and PSE scheduled as S3, pharmacists will be more likely to choose or prefer the recommendation of PSE for effective relief of cold symptoms, given its superior efficacy when compared with phenylephrine.

This has been the pharmacists approach since 2006 with the rescheduling of PSE based products to S3. If S2 codeine containing cold and flu products were to be up-scheduled it would exponentially increase the volume of PSE products in pharmacy, and the associated risks related to illicit access for methamphetamine manufacture. XXX can confidently make this claim as we saw a significant increase in the demand of PSE-containing XXXXXX when there were supply issues with PE-containing XXXXXX. The original and **successful strategy** that was supported by the NDPSC to help reduce the volume of PSE supplied through pharmacy by maintaining the S2 scheduling of PE with codeine combinations.

To make a decision that would drive the growth of pseudoephedrine is not in the interest of public health.

If an additional move was made to make the Codeine PSE combinations S4, based on the research conducted at Macquarie University (see below), it will drive consumers to their GPs (as noted above) for prescriptions of pseudoephedrine with codeine, but it may well encourage criminals to go doctor shopping for PSE prescriptions as a means of obtaining precursor material for the manufacture of methamphetamine and the associated harm to the community. The ability to track PSE doctor shopping behaviour is limited as it would be private prescription, and will not get captured in project STOP.

Increased Burden on the Public Health System

Recent Macquarie University research has revealed that 62% of people would visit a doctor if the medication for their condition became unavailable over the counter[2] (Appendix 2). Rescheduling S3 cold and flu products with codeine means that a major proportion cold and flu products containing PSE will become S4 prescription medicines

If those people were to attend a general practice for a standard level B consultation to get access to effective symptomatic relief for cold and flu, the potential cost to the taxpayer is an additional $87 million per annum. This is not to mention the cost to the consumer if the GP does not bulk-bill, and the potential for inappropriate antibiotics to be prescribed in this care setting (supported further below).

Further, there is a current campaign that is run by the South Eastern Sydney local health district (NSW department of health) about "*Saving our emergency departments for emergencies*". Within this campaign coughs, cold and flus are called out as conditions that could adequately be managed by other healthcare service providers, such as pharmacists. Clearly this campaign is being run as people with these conditions are currently and inappropriately presenting themselves at emergency departments for what are minor and self-limiting ailments. If access to effective and safe medication for these episodic, self-limiting conditions is further restricted, it could lead to an increase in the inappropriate presentation of patients to emergency departments.

At a time when the Federal Government has been desperate to control unsustainable growth in utilisation of GP services to balance the Federal Budget, the idea of driving people with colds and flus into see a doctor at the taxpayer's expense is both contradictory and bad policy.

Increase to Inappropriate Prescribing of Antibiotics

It is widely accepted that General Practitioners have not yet managed to reign in the magnitude of antibiotics prescribed for colds and flus. Australia has one of the highest prescribing rates of antibiotics for acute viral upper respiratory tract infections. If access to codeine containing cold and

[2] Macquarie University. The Value of OTC Medicines in Australia. March 2015

flu products was further restricted by up-scheduling, it is highly likely that there would be an increased number of patients presenting to GPs with colds and flus. It is also highly likely that there would be an increased number of antibiotics prescribed, as a result of driving people into this setting of care. The inappropriate use of antibiotics for the treatment of colds and flus is an area NPS Medicinewise (the National Prescribing Service) is actively trying to address; due to the detrimental impact antibiotic resistance has on public health.

Shifting the Problem from Pharmacists to General Practice

XXX takes the issue of addiction very seriously - as mentioned previously we actively monitor this through adverse events reporting and analysis of market data. Moving a product from S3 to S4 will not however, solve the problem of misuse or abuse. There are medicines only available through prescription which are still abused. These include growth hormones and anabolic steroids, opioids and benzodiazepines. Oxycontin and alprazolam are currently the most abused drugs in Australia and the only means by which to obtain them is through a doctor's prescription. This is largely a result of unmonitored of doctor-shopping, and the lack of shared health records in Australia.

There is a significant risk that the desired outcome of reduced misuse will do nothing more that shift the issue from one healthcare domain to another (pharmacy to general practice) or move the issue to different substances e.g. codeine to oxycontin.

In contrast, monitoring of potential misuse has been successfully achieved in the community pharmacy care setting through the pseudoephedrine-monitoring 'Project STOP' program which has greatly reduced the diversion of PSE-containing products into the criminal supply chain in most states.

Conclusions

Rescheduling is a blunt instrument being considered to limit consumer access to the cold and flu treatment category, as a consequence of anecdotal reports of misuse of a combination in another treatment area (analgesia).

XXX is aware of no new evidence emerging since the 2009/10 NDPSC decisions to suggest the population is inappropriately using codeine containing cold and flu products. Evidence provided in this submission clearly supports the notion that the current scheduling of cold and flu products with codeine is appropriate and that the absolute pack sales of codeine-combination analgesic products has decreased dramatically since rescheduling to S3 in 2009.

The current scheduling arrangements for cold and flu products with codeine have remained appropriate. Consumers appear to have a preference or requirement for different levels of treatment to appropriately self-manage their symptoms of cold and flu. This ranges from simple unscheduled treatments available in grocery, to products available as S2 in pharmacy, and then S3 available behind the counter because of the PSE content.

Codeine-containing cold and flu products are different to codeine-containing analgesics; Colds and flus are self-limiting and episodic. Patients treat their symptoms until such time as those symptoms are no longer bothersome, at which point they cease taking the product. Analgesic use is different with some users inappropriately continuing use for the treatment of chronic pain. Due to the differences in the way these different products in different categories are used, their associated risks should be considered independently of each other.

Concern expressed about the potential for demand for OTC analgesics with codeine to transfer to cold and flu products with codeine, has been allayed. Historical evidence strongly supports there is no transfer of demand. This applies to both S3 pseudoephedrine and S2 phenylephrine-codeine combinations

The unintended consequences of scheduling changes to cold and flu products with codeine are likely to have negative economic impacts to the patient and the health system, placing undue pressure on the GP with extra patient load and potential for inappropriate antibiotic prescribing as well as an increased PSE load in pharmacies and the supply chain which increases the risk of illicit activity associated with PSE.

As with all drugs and chemical substances, XXX acknowledges the risk of misuse or addiction. However, no matter what medicine we are discussing, these risks have always been taken into context against the greater good. That is the hallmark of our industry. We need only review the facts to determine whether the greater good is what is being considered in this proposal. Given the rate of addiction and the rate of adverse events (including death) that occur every year related to codeine-use *VERSUS* the rate of addiction and adverse events related to more pernicious drugs like alcohol and tobacco which are sold in uncontrolled environments and without oversight from a qualified HCP, is making wholesale changes to the scheduling of codeine a reasonable and appropriate focus?

We know the vast majority of consumers accessing codeine-containing medicines use these products properly and, in purchasing them, have the opportunity to interact with a credentialed healthcare provider in community pharmacy. Rescheduling these medicines will not solve the complex problem of addiction – it will merely shift it to another healthcare setting and, bring with it a host of unintended consequences which, the former NDPSC acknowledged, are most certainly not in the public interest.

Appendix 1

Pilgrim, Dobbin & Drummer (2013) Fatal misuse of codeine–ibuprofen analgesics in Victoria, Australia. MJA 199(5) 329

Fatal misuse of codeine–ibuprofen analgesics in Victoria, Australia

To the Editor: Morbidity and mortality in cases where codeine from over-the-counter (OTC) combination analgesics is detected are usually secondary to codeine addiction and are the result of exposure to supratherapeutic doses of simple analgesics containing codeine. Toxicity from the accompanying analgesic, such as paracetamol, ibuprofen or aspirin, can lead to paracetamol hepatotoxicity, or non-steroidal anti-inflammatory drug (NSAID) toxicity such as gastrointestinal ulcers and haemorrhage,[1] or renal tubular acidosis.[2]

In light of the increasing clinical evidence of codeine–ibuprofen analgesic misuse-related morbidity,[3] we conducted a search for relevant cases from the National Coronial Information System, for

individuals deceased in Victoria between 1 January 2001 and 31 December 2011. Ethics approval from the Victorian Department of Justice was obtained for the study. We included cases where codeine and ibuprofen were co-detected in postmortem toxicological analysis, or where codeine–ibuprofen analgesic misuse was described in the coroners' findings. There were 115 such cases, comprising deaths from all causes, including deaths from natural disease (33 individuals), external injury (10), drug toxicity, not necessarily caused by the codeine-combination analgesics (63) and where the cause remained undetermined (nine).

Pathology reports and coroners' findings in the cases flagged by a death investigator as potentially attributable to drug toxicity were examined more closely to identify any evidence of NSAID toxicity. Pathological examination findings typical of chronic NSAID toxicity were reported in seven individuals (who had both codeine and ibuprofen detected on postmortem toxicological analysis), manifesting as gastric erosions and ulceration in three individuals, chronic gastritis in one, renal necrosis and disease in two and hepatocyte necrosis in one. Of these, the cause of death was recorded as undetermined in one individual, natural disease in three, and drug toxicity involving an excess of codeine plus other drugs (including moclobemide, paracetamol and oxycodone) in a further three. Additionally, in one of these, the concentration of ibuprofen was also considered to be excessive.

There were two cases where codeine was detected without ibuprofen on postmortem toxicological analysis, but the death involved pathological findings indicative of chronic NSAID toxicity. One was attributed to a perforated gastric ulcer with peritonitis secondary to long-term misuse of Nurofen Plus (containing ibuprofen and codeine) (Reckitt Benckiser), which is the strongest codeine tablet available in Australia without prescription. A second case was attributed to codeine toxicity involving ibuprofen and benzodiazepines. This individual was a "doctor shopper" who was subject to a regimen that limited her access to one doctor and dispensing pharmacy. However, she was still able to obtain OTC medication.

Reports of misuse from OTC codeine-combination analgesics are increasing.[4] Considering the risks of these drugs, we recommend that codeine not be included in these products, or that these products be confined to prescription-only.

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Competing interests: No relevant disclosures.

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1 Dutch MJ. Nurofen Plus misuse: an emerging cause of perforated gastric ulcer. *Med J Aust* 2008; 188: 56-57.

2 Ng JL, Morgan DJ, Loh NK, et al. Life-threatening hypokalaemia associated with ibuprofen-induced renal tubular acidosis. *Med J Aust* 2011; 194: 313-316.

3 Frei MY, Nielsen S, Dobbin MD, Tobin CL. Serious morbidity associated with misuse of over-the-counter codeine-ibuprofen analgesics: a series of 27 cases. *Med J Aust* 2010; 193: 294-296.

4 Nielsen S, Tobin C, Dobbin M. OTC codeine: examining the evidence for and against. *Aust Pharm* 2012; 31: 236-240. ❑

Appendix 2

Macquarie University. The Value of OTC Medicines in Australia. March 2015

Consumer Behaviour Fact Book

MARCH 2015

UNDERSTANDING CONSUMERS' USE AND ATTITUDES TOWARDS OTC MEDICINES, VITAMINS, MINERALS AND SUPPLEMENTS.

An Enterprise Partnership Study by

MACQUARIE University

CENTRE FOR THE HEALTH ECONOMY

414625 414625 Cover PRF Sig 1 A

This independent research project was conducted by Professor Scott Koslow,
a senior academic in the Department of Marketing and Management at
Macquarie University. Macquarie University jointly funded the study through a pilot research grant
under an “Enterprise Partnerships Scheme”.

ISBN 978-1-74138-424-6

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INTRODUCTION

In the current health care debate in Australia, the role of medicines shines as one of the most effective treatment strategies available for a wide range of conditions. Medicines are also one of the most efficient tools to improve Australians' health. While most assume prescription products are the only medicines used in treating Australians, the majority of Australians also use over-the-counter medicines to self-medicate at the onset of sickness, and vitamins and minerals to maintain or improve their overall health.

While there is considerable research on the compounds, treatment regimens and health outcomes, there is less research informing us of what we think about medicines and how we use them. For example, how often do typical Australians take medicines for a range of conditions from colds to pain to skin rashes? When we do take them, is it easy for most consumers to make choices? If we could not get the medicines we needed over-the-counter, would we visit the doctor to get them prescribed—at a considerable cost to the government and our own pockets?

To provide some basic facts to understand consumer attitudes and use of common medicines, the Australian Self-Medication Industry (ASMI) approached Macquarie University Centre for the Health Economy (MUCHE) for research into these attitudes. The resulting study considers several key research questions:

Research Questions

1. What are consumers' use of and attitudes toward over-the-counter (OTC) medicines?
2. How do consumers use vitamins, minerals and supplements (VMS)?
3. Prescription to OTC switch – what are the consumer insights?

This study reports on the methodology and findings associated with these three research questions.

Study Methodology

The study, undertaken in December 2013, surveyed in two parts the attitudes of 1146 Australians over the age of 18 regarding OTC, VMS and prescription (Rx) medicines. Respondents were also asked to report on children or other family members they supervised. The questionnaire was designed based on the findings of qualitative focus groups conducted to consider the three research questions identified above. The respondents generally matched the Australian population, but in the few cases where there were statistical differences, these were adjusted so that the numbers reported reflect the current Australian population.

The first section of the questionnaire asked about current OTC medicine usage, followed by questions about what respondents would do if they did not have access to these medicines without a prescription. If the respondent supervised children or other family members, they were also asked about their dependants' OTC medicine usage and what they would do if they did not have access. In the second section respondents were asked about their use of vitamins, minerals and supplements and their motivation for using these. The third section asked about usage of eleven common prescription medicines and about the doctors' visits to obtain these prescriptions.

Although the sample population was 1146 Australian consumers, the questions put to these consumers elicited responses about a number of different medicines they took. Accordingly, in some cases the sample size reflects consumers as the unit of analysis and in other cases reflects medicines used by the consumers as the unit of analysis. In addition, of these 1146 consumers, 807 also reported on their children and/or dependants. For both these reasons, sample sizes change in this report based on the specific data being analysed. The sample size for any given analysis is noted on the particular chart.

It should also be noted that for any analysis where the sample size is less than 100, it is difficult to make meaningful extrapolations to the general public. This is noted with an asterisk within the report where relevant.

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GENERAL STATISTICS

Gender

Out of 1146 people surveyed in this study, 51% of people were male and 49% female across Australia.

Figure 0.1: Gender distribution of sample | N:1146

What State do you live in?

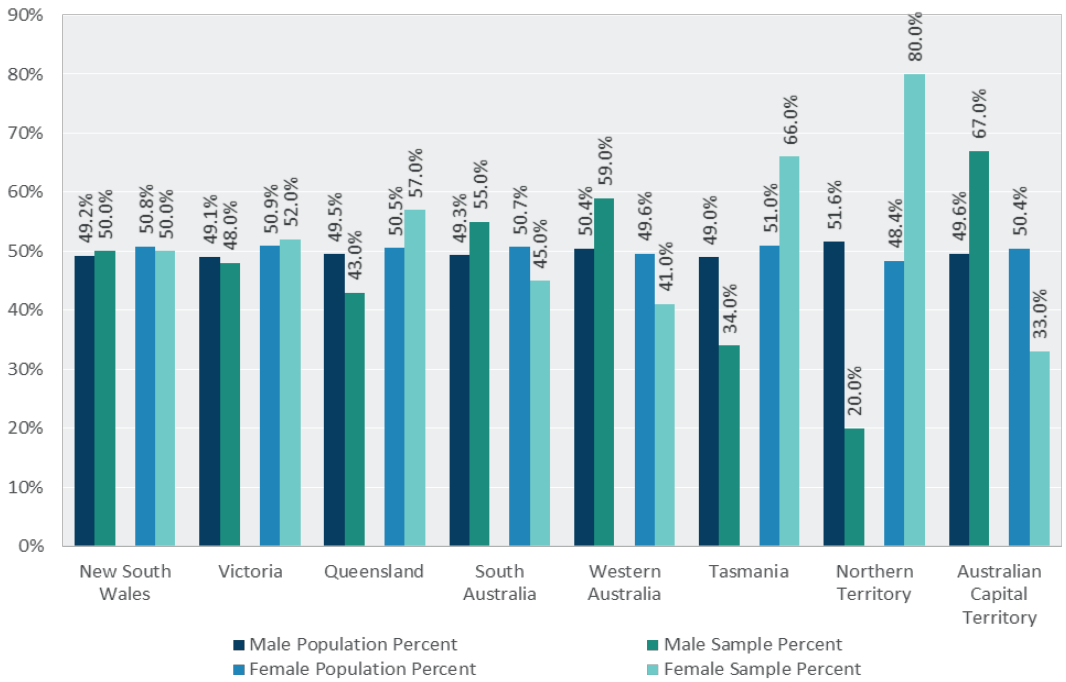


Figure 0.2: Gender distribution across States | N:1146

It should be noted that the sample sizes for Tasmania, Northern Territory, and ACT are too small to allow a representative comparison.

Age

In terms of age, respondents are distributed across different age groups. The highest proportion of respondents is aged 65 years or over at 20.7%. This is followed by respondents aged 45-54 years, at 17.7% as the second major age group.

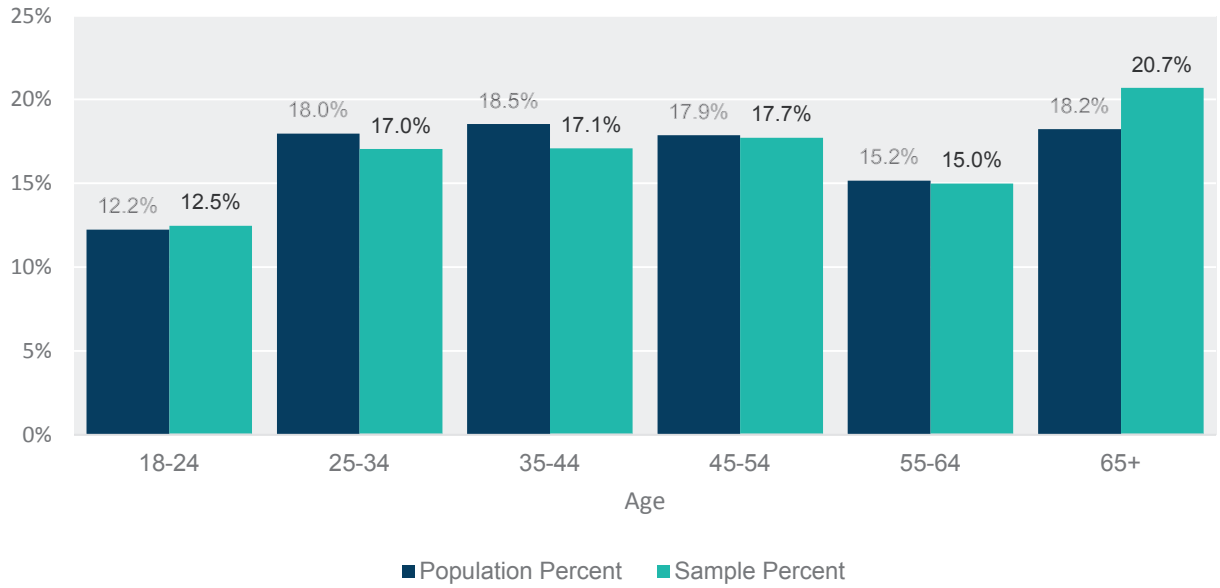


Figure 0.3: Age distribution of sample | N:1146

Number of dependants

Respondents were asked whether they were the principal supervisor of a child or other family member. While 32.5% of people surveyed did not supervise any children, the majority of respondents have one child to supervise at 48.6%, followed by two children and three or more at 13.4% and 5.5% respectively.

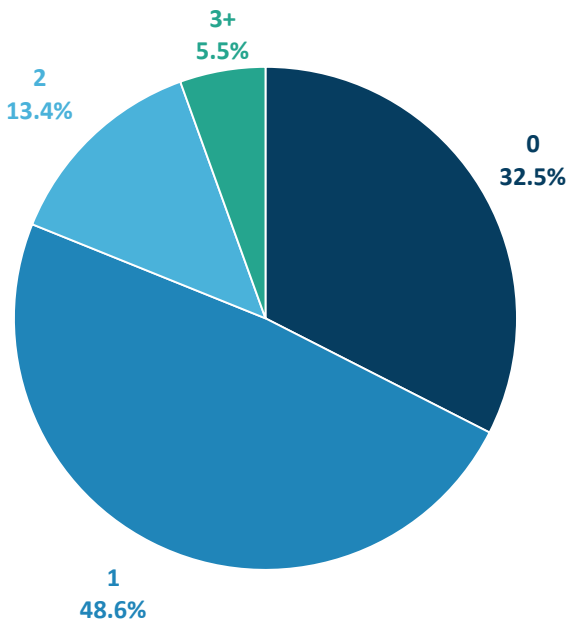


Figure 0.4: Number of children to supervise | N:1146

Birthplace

Where were you born?

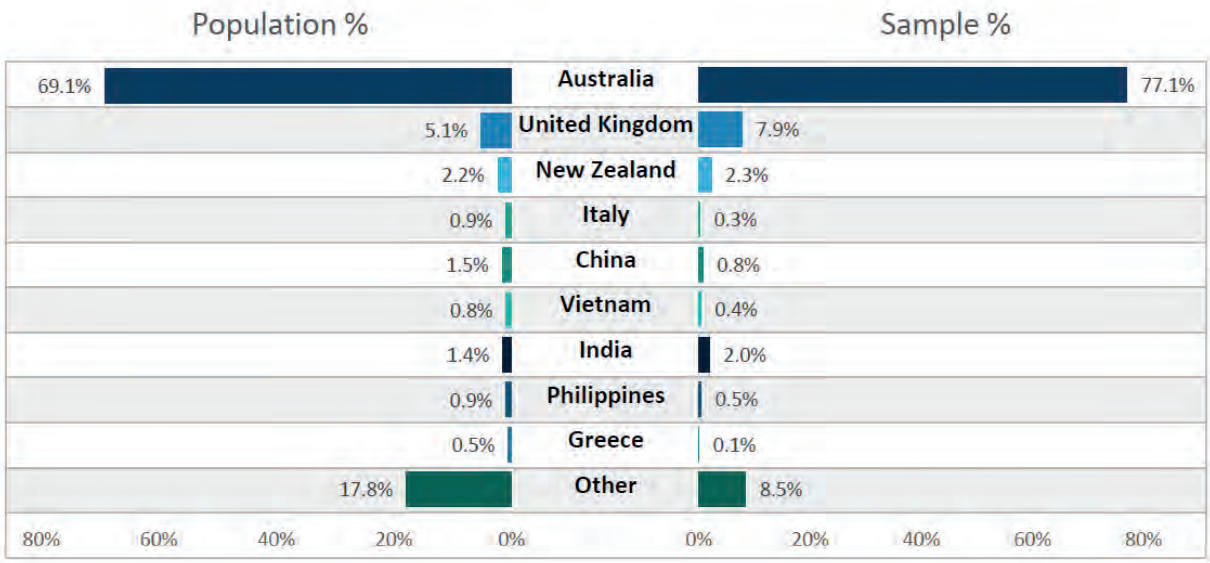


Figure 0.5: Country of birth | N:1146

The majority of respondents were born in Australia at 77%. This is followed by the United Kingdom at 8%. Around 7% of people surveyed were born in countries such as New Zealand, Italy, China, etc. The remaining 9% of respondents were born in other countries not listed here.

Years living in Australia

How many years have you lived in Australia?

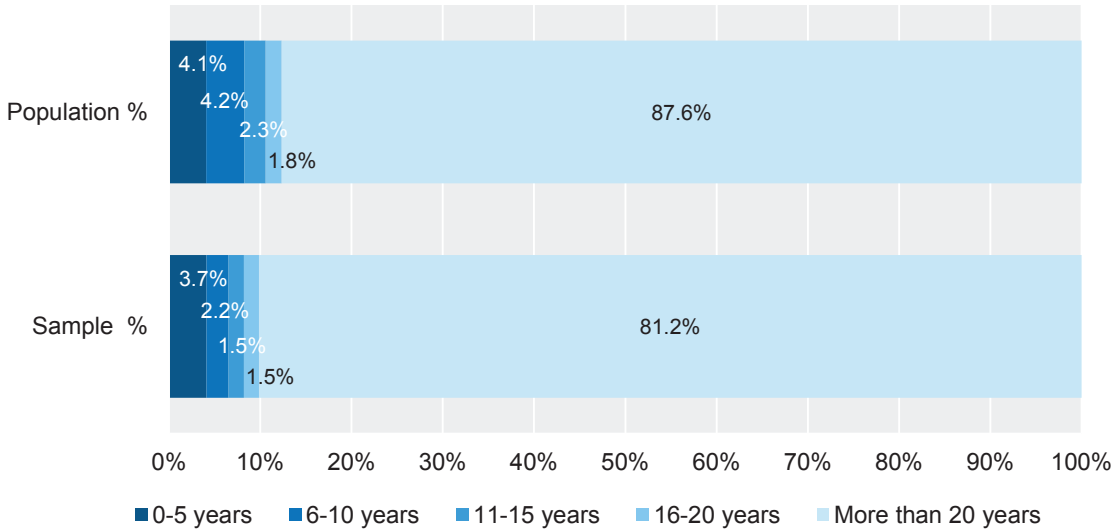


Figure 0.6: Years lived in Australia | N:1146

The majority of people surveyed has been living in Australia for the last 20 years (61.8%). The second major proportion of respondents has lived in Australia for five years or less at 15.9%.

Ethnicity

If asked your ethnicity, what would you say it is?

Australian, British-Australian, and European-Australian represent more than 85% of the people surveyed. Other ethnicities account for around 15% of the respondents.

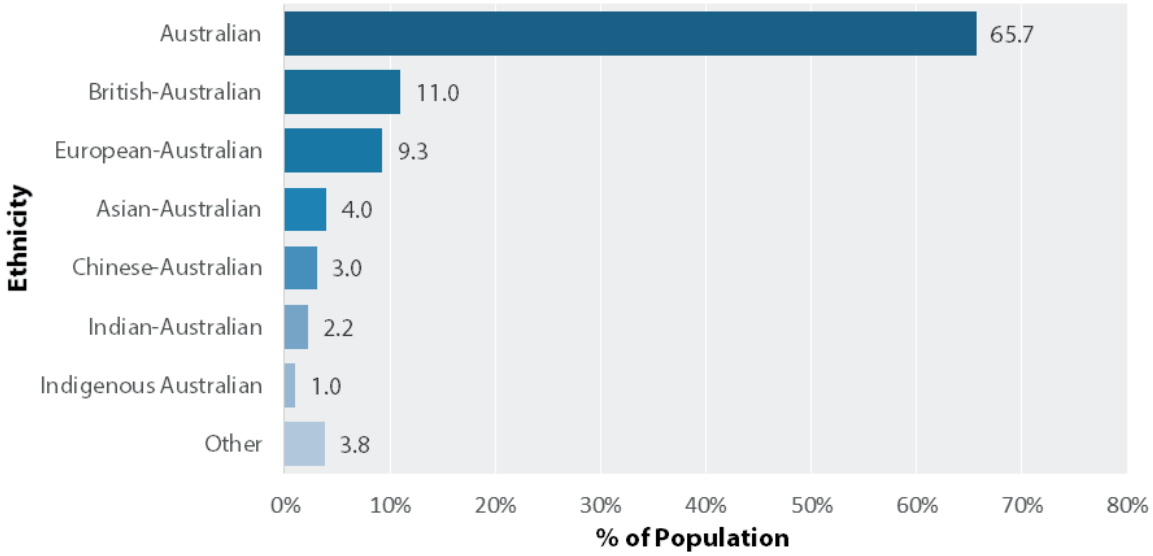


Figure 0.7: Ethnicity by proportion of population | N:1146

Highest level of education reached

What is your highest level of education?

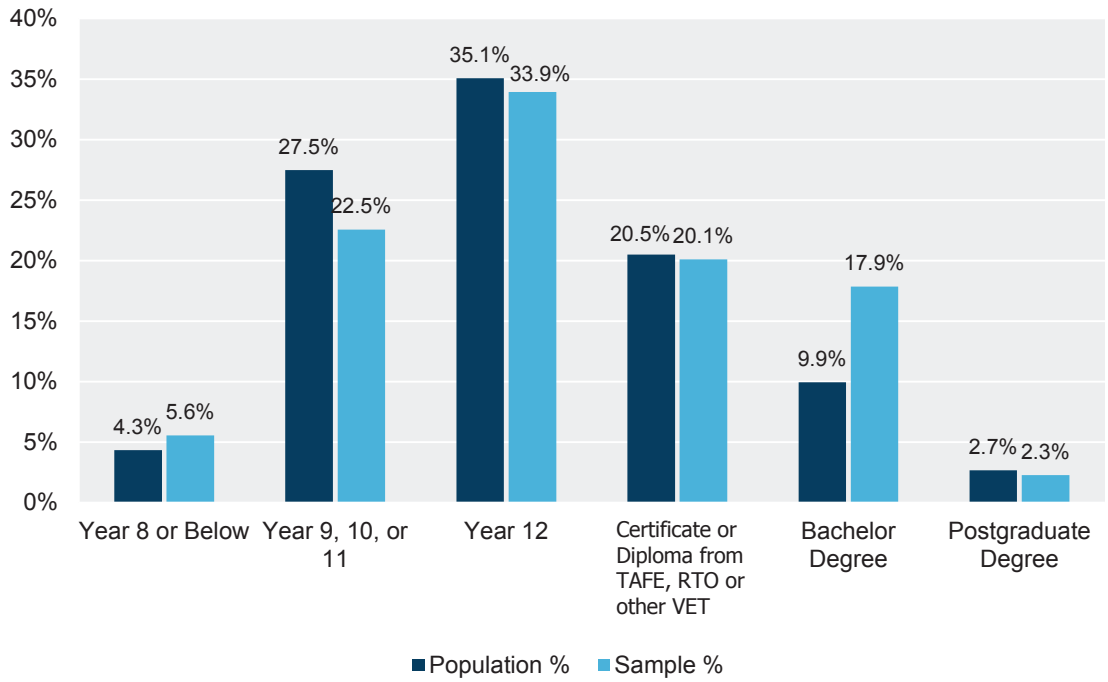


Figure 0.8: Population by level of education | N:1146

Around 20% of people surveyed have a certificate or diploma from TAFE, RTO or other VET. While 18% of respondents have a bachelor degree, approximately 23% have finished school in Years 9, 10 or 11.

Doctor waiting times

How many days do you normally have to wait to get to see your usual doctor?

The majority of respondents reported that they do not need to wait more than a day to see their doctor. 32.7% of respondents see their doctor the next day and 30.3% on the same day. A minority (6.5%) wait for three days to see their usual doctor.

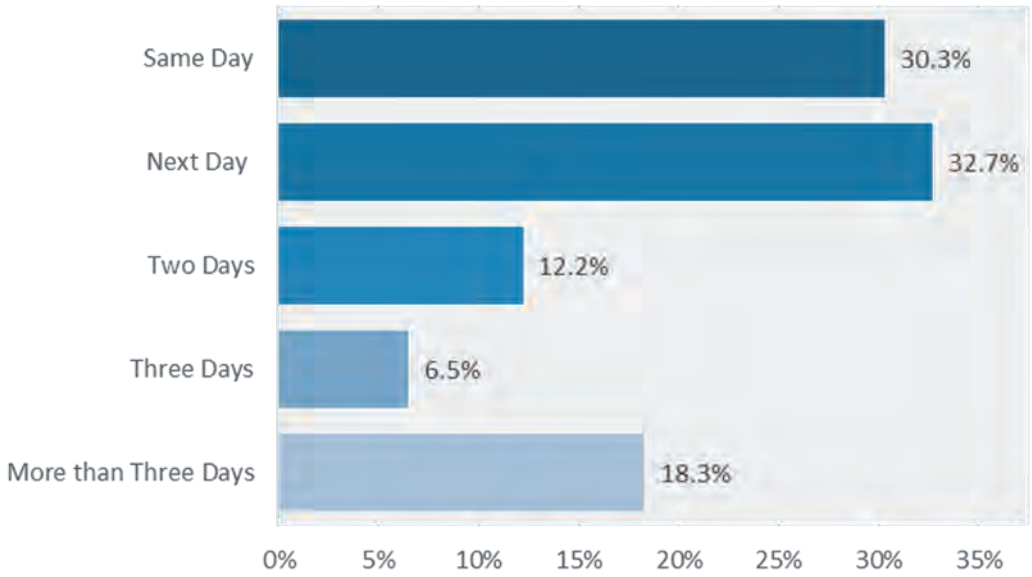


Figure 0.9: Waiting time to get doctor's appointment in days | N:1146

On average, how long do you normally have to wait in the waiting room before seeing your doctor?

Around 80% of respondents wait for no longer than 40 minutes to see their doctor. Just less than 2% of people need to wait for more than two hours to see their doctor. The remaining 18% of respondents need to wait between 40 minutes to two hours.

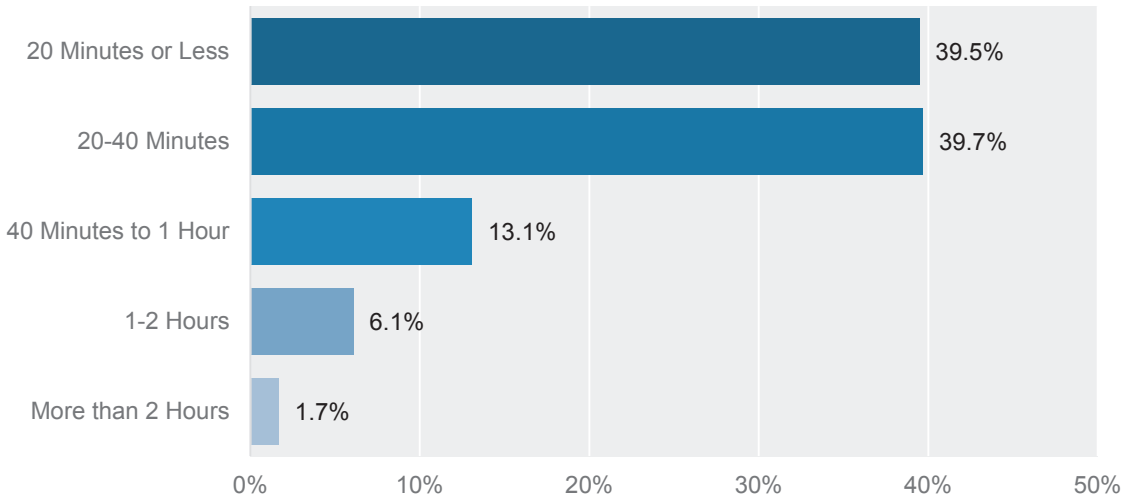


Figure 0.10: Doctor waiting room time | N:1146

Doctor out of pocket expense per visit

How much do you, personally, normally pay (out of pocket) to visit your usual doctor?

Figure 0.11: Doctor out of pocket costs ($) | N:1146

On average, respondents pay $20.12 out of their pocket to visit their usual doctor.

Do you have private health insurance?

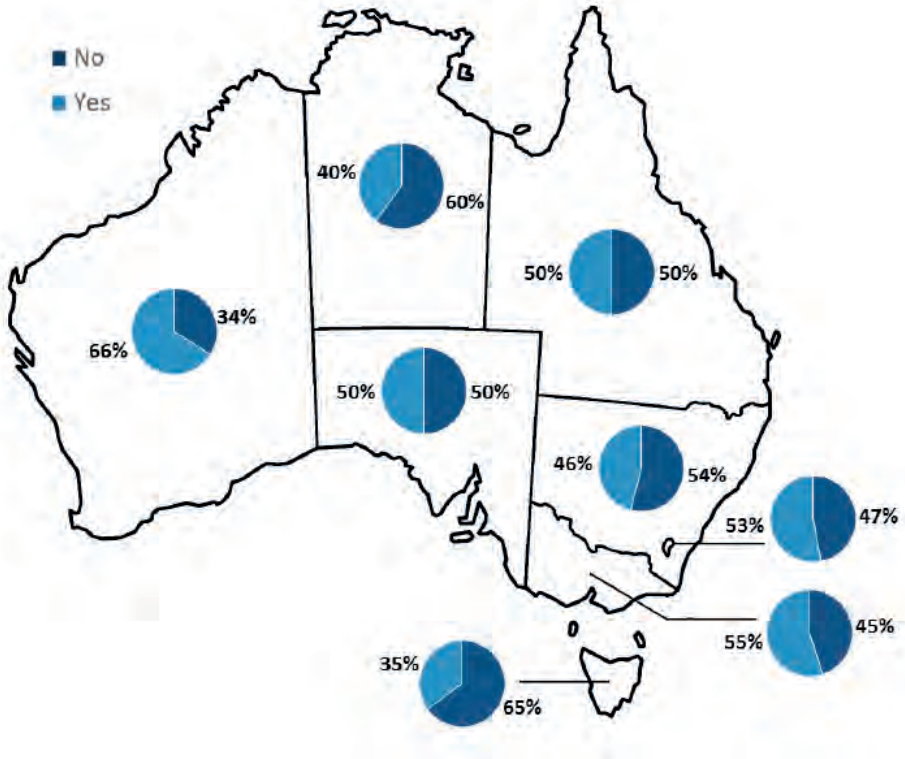


Figure 0.12: Proportion of population with private health insurance | N: 1146

Within the sample, West Australians have the highest level of private health insurance coverage in Australia with 66% of people living in that state covered by private health insurance. The sample from Tasmania has the lowest proportion of respondents with private health insurance at 35%. Victoria has the second highest rate of private health insurance at 55%, followed by Queensland and South Australia at 50%.

SECTION 1:

What are consumers' use of and attitudes toward OTC medicines?

1.1 Usage of OTC medicines by adults

Usage of OTC medicines in the last month

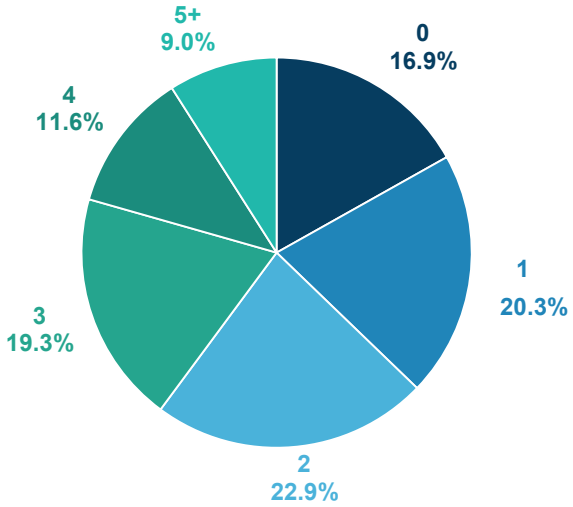


Figure 1.1: OTC usage by adults in the last month | N:1146

This graph shows the percentage of respondents who have used a number of OTC medicines in the last month, with only 16.9% reporting to have not used an OTC in the last month.

Usage of OTC medicines in the last year

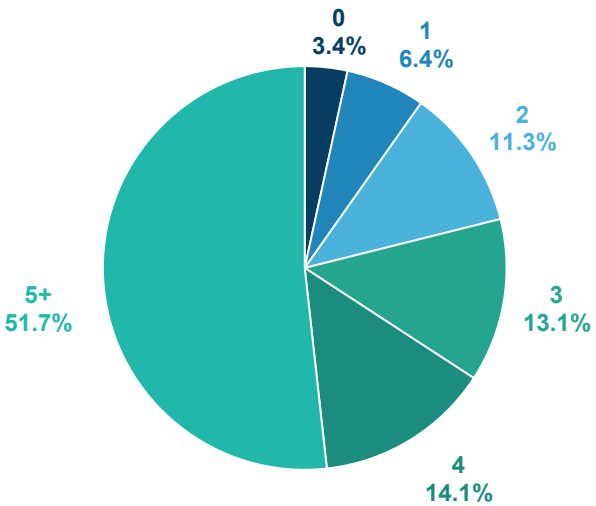


Figure 1.2: OTC usage by adults in the last year | N:1146

The majority of respondents used five or more OTC medicines in the last year. This suggests consumers are comfortable treating a variety of illnesses with OTC medicines on a regular basis.

Category penetration

When did you last take this type of medicine?

Pain relievers have the highest penetration, followed by cough and cold medication with only 4.5% and 6.9% of people respectively having never used them.

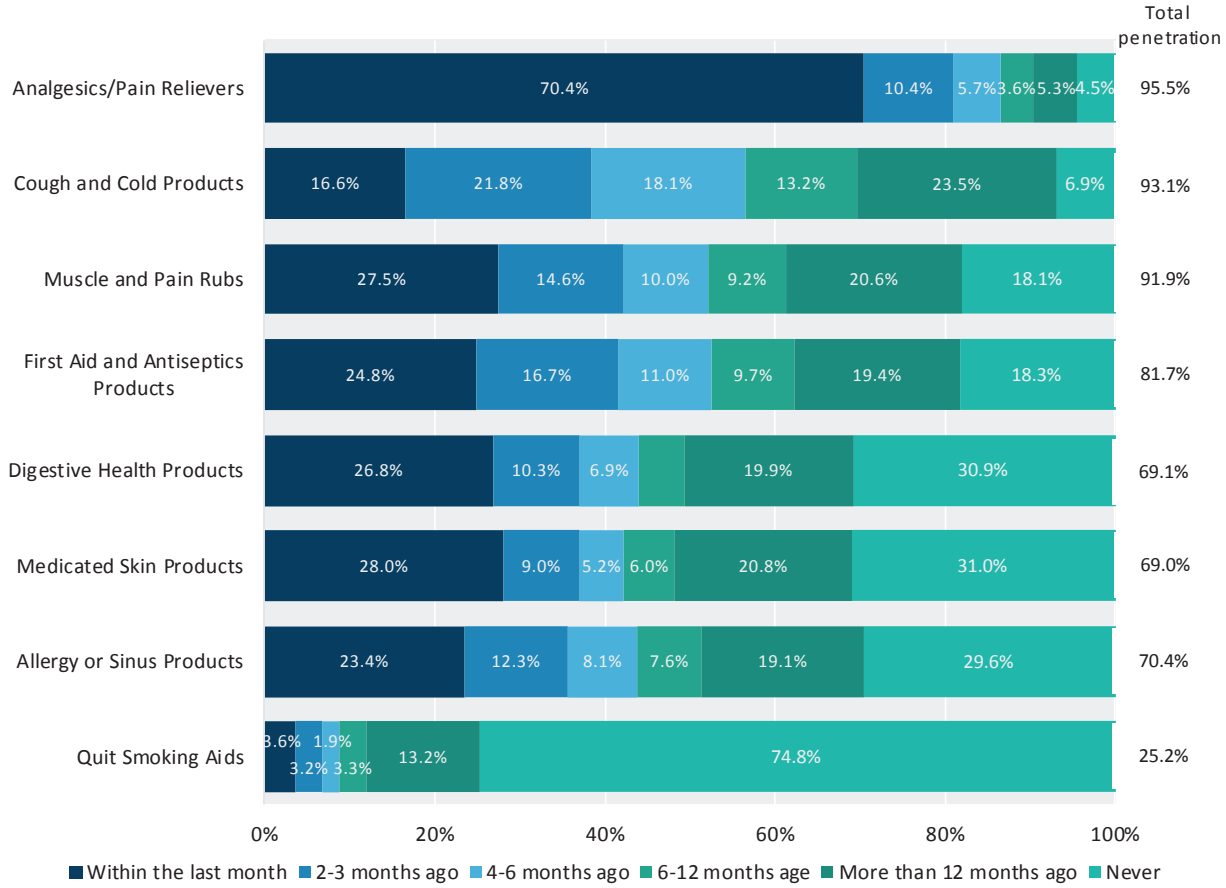


Figure 1.3: OTC category penetration | N:1146

Among the 1146 respondents, more than 70% have taken an analgesic/pain reliever medicine within the last month. This is followed by medicated skin products at 28% and muscle and pain rubs at 27.5% as the second and third major type of medicines taken by respondents within the last month.

Frequency of use by category

In the last 12 months, how many times did you take a particular type of medicine to treat that type of illness or condition?

Pain relievers, products for digestive health and allergy or sinus products have the highest frequency of use, with larger proportions of respondents in these groups reporting taking medicine four or more times within the last 12 months for these conditions than compared with other conditions.

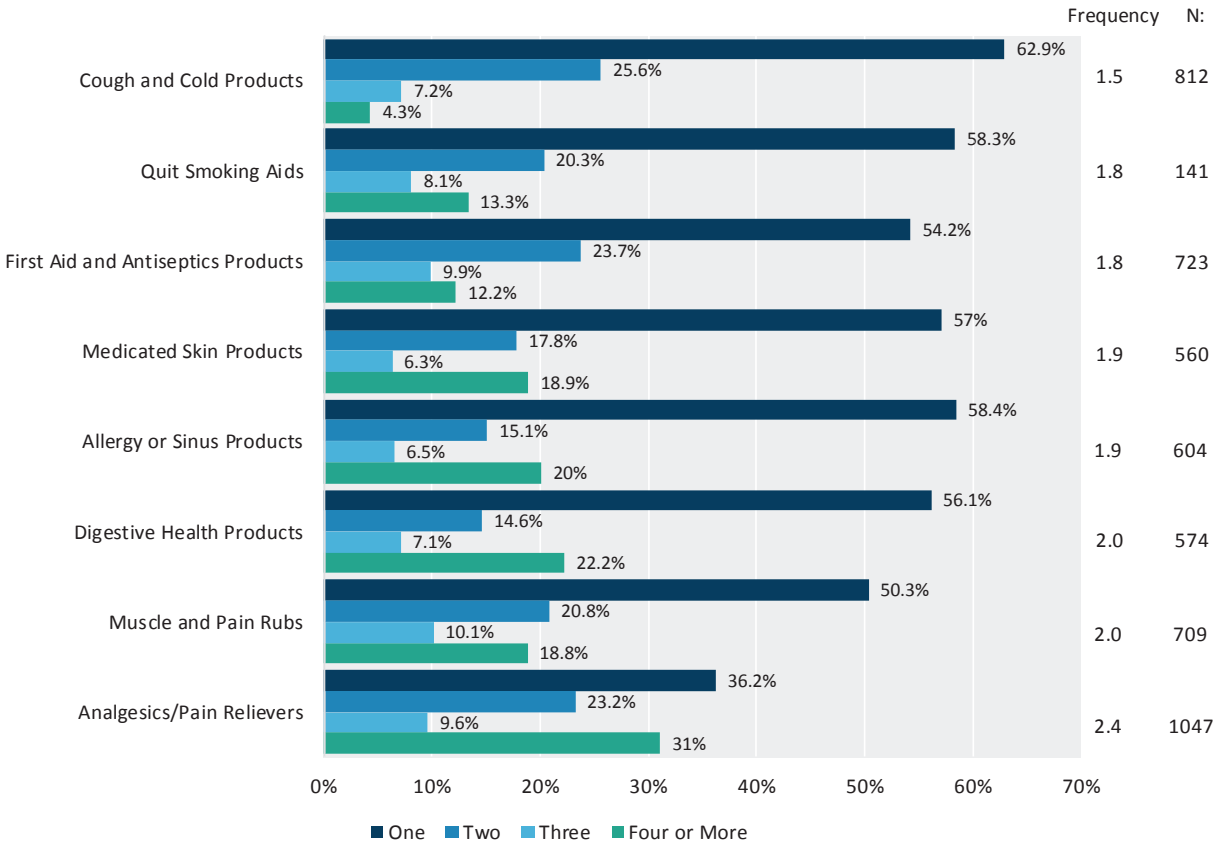


Figure 1.4: Frequency of use by category

Figure 1.4: Frequency of use by category

Usage duration by category

For how long did you usually take these medicines?

Respondents reported using medicated skin products and quit smoking aids on a daily basis at 20.5%, and 19.9% respectively. While muscle and pain rubs are mainly used for two days (27.6%), cough and cold medicines are mainly taken for a period of three to five days (39.2%). An average use per 90 days is listed for each product (annualised average use is calculated as 4x average use per 90 days).

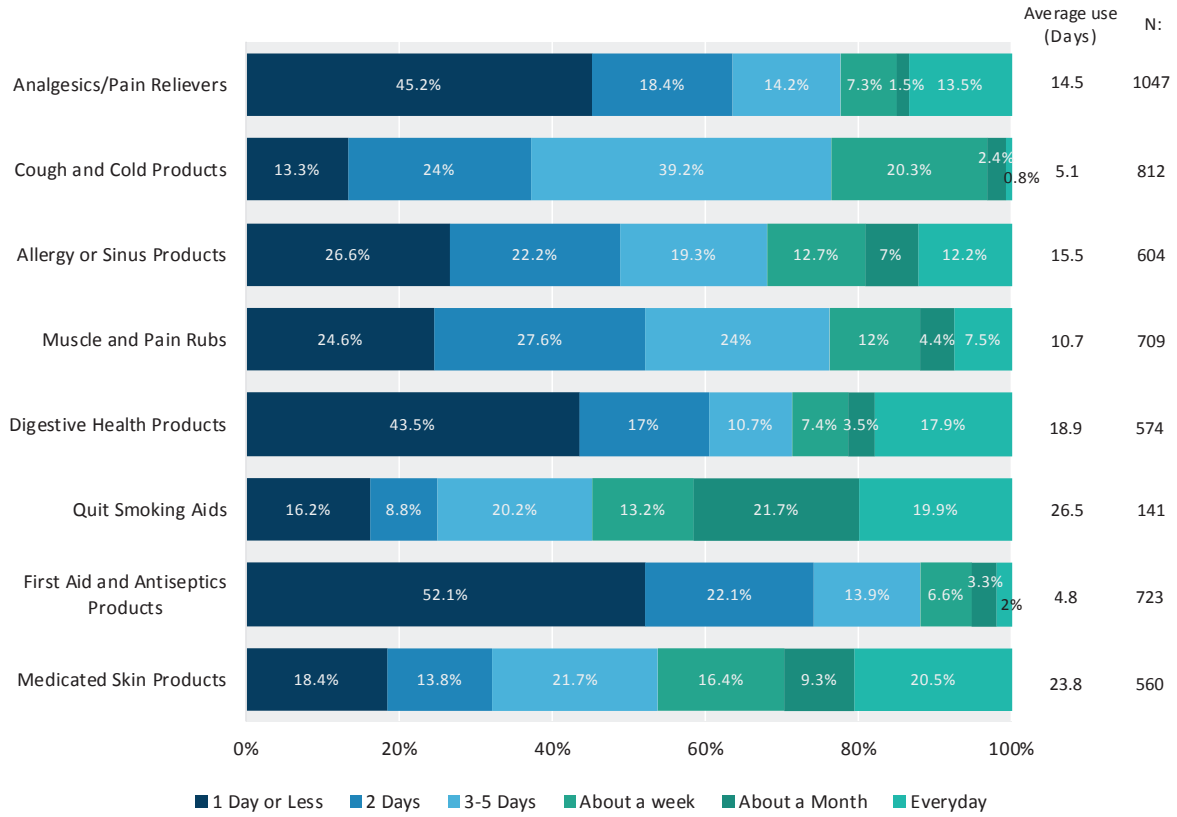


Figure 1.5: Category by duration of usage

Retail split of OTC purchases

Where did you buy the medicine you took?

Overall, 41% of medicines were self-selected either from pharmacy open shelves or front-of-counter. This is followed by purchase from behind-the-counter in the pharmacy at 36%. This split reflects legislative requirements in each state about placement of medicines within pharmacies, not product schedules. A smaller proportion of medicines (23%) is bought from a supermarket.

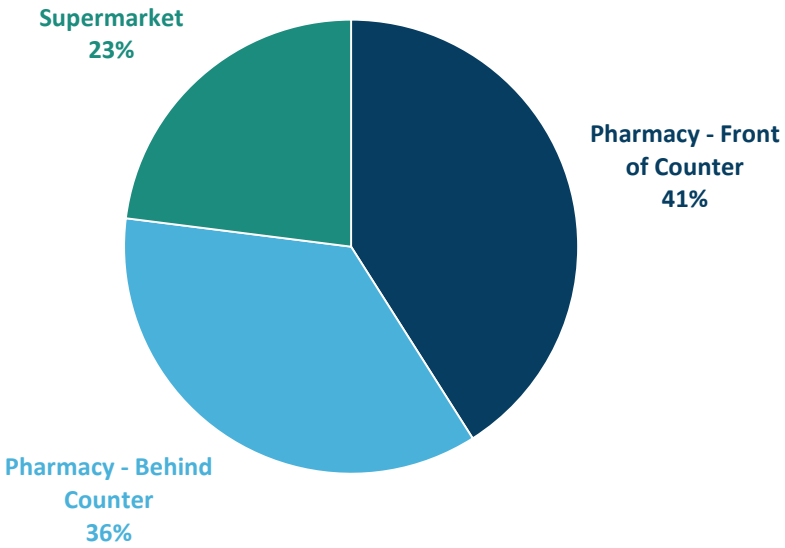


Figure 1.6: Retail split of OTC purchases | N: 1146

Retail split by category of OTC purchases

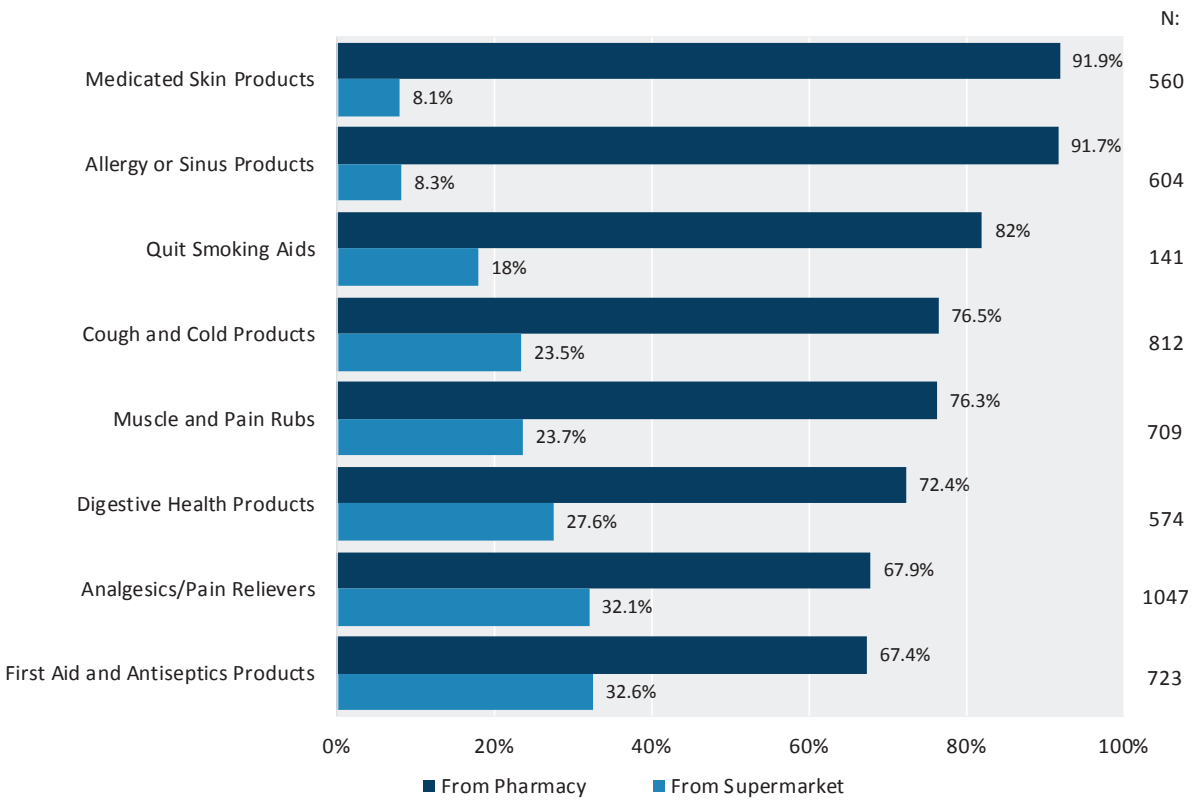


Figure 1.7: Retail channel by OTC categories

Alternative actions from restricting access to OTC medicines - overall

If you could not get the medicine you needed without a prescription, what would you do?
Respondents were asked what they would do if they could not get the medicine they needed without a doctor's prescription. For example, if pain relievers were suddenly up-scheduled to prescription only, what would they do? 51.1% of respondents reported that if they could not get the medicine they needed without a prescription, they would mainly visit their doctor. Alternatively they may also use a home remedy (21%), or decide to "tough it out" by doing nothing (19.3%). A minority (1.5%) said they would consider going to an emergency department. Respondents could choose multiple options for this response and frequently did so.

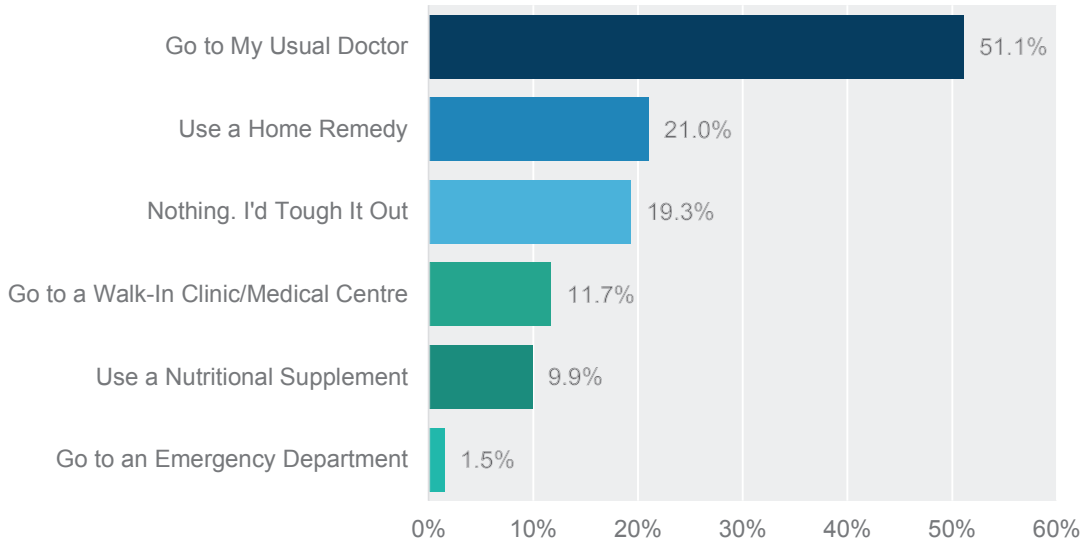


Figure 1.8: Alternative action if OTC unavailable - aggregate | N:1146

Alternative actions from restricting access to OTC medicines - by category

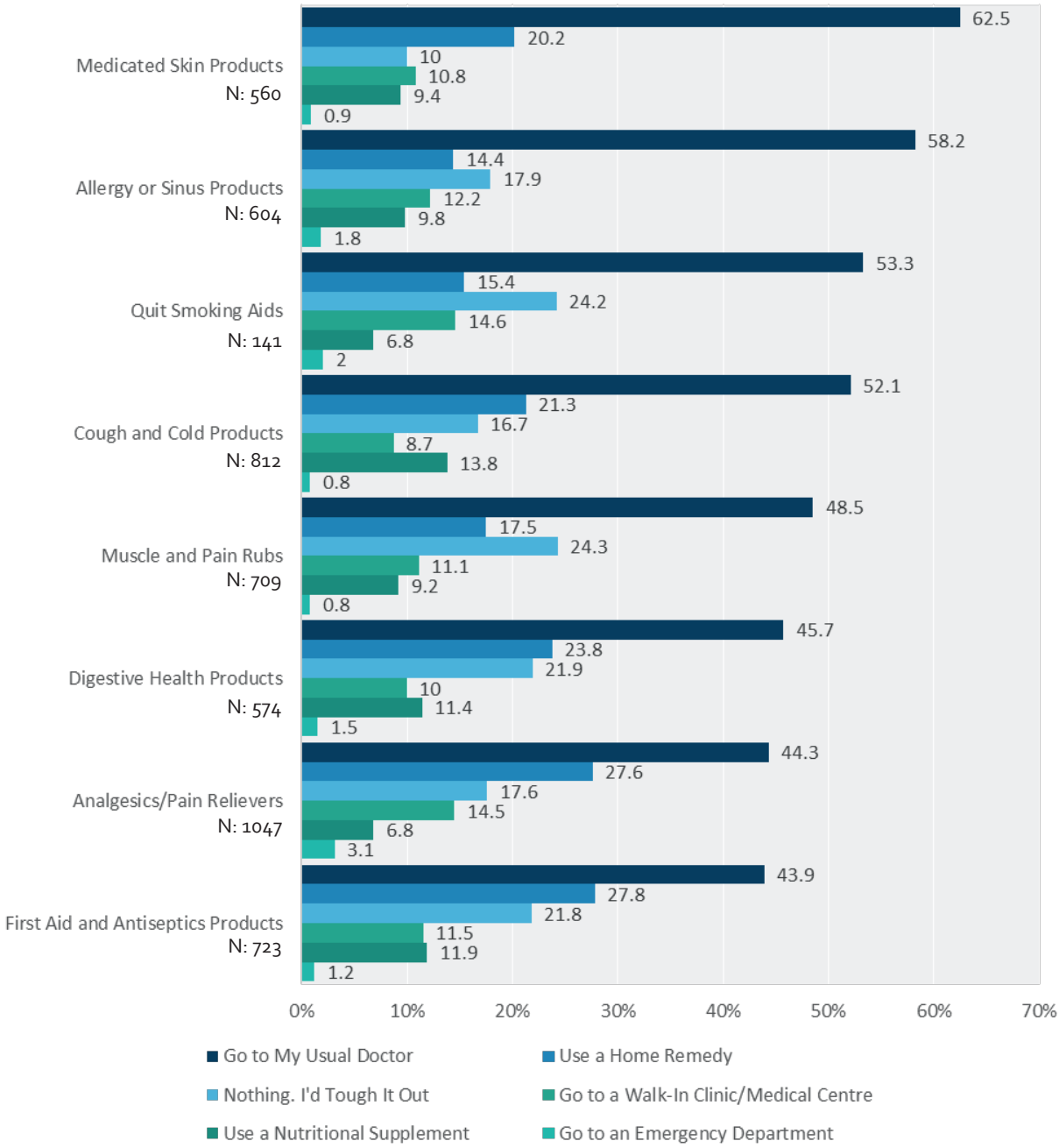


Figure 1.9: Alternative action if OTC unavailable - by category

Days off work by category if OTC medicines were not available without prescription

If you didn't have any access to the medicine below, how many extra days would you be off from work for each illness?

The majority of respondents stated that they prefer to have zero days off from work for any illness. The majority of people also said that they would take one or more days off from work if there were no OTC cough/cold products available.

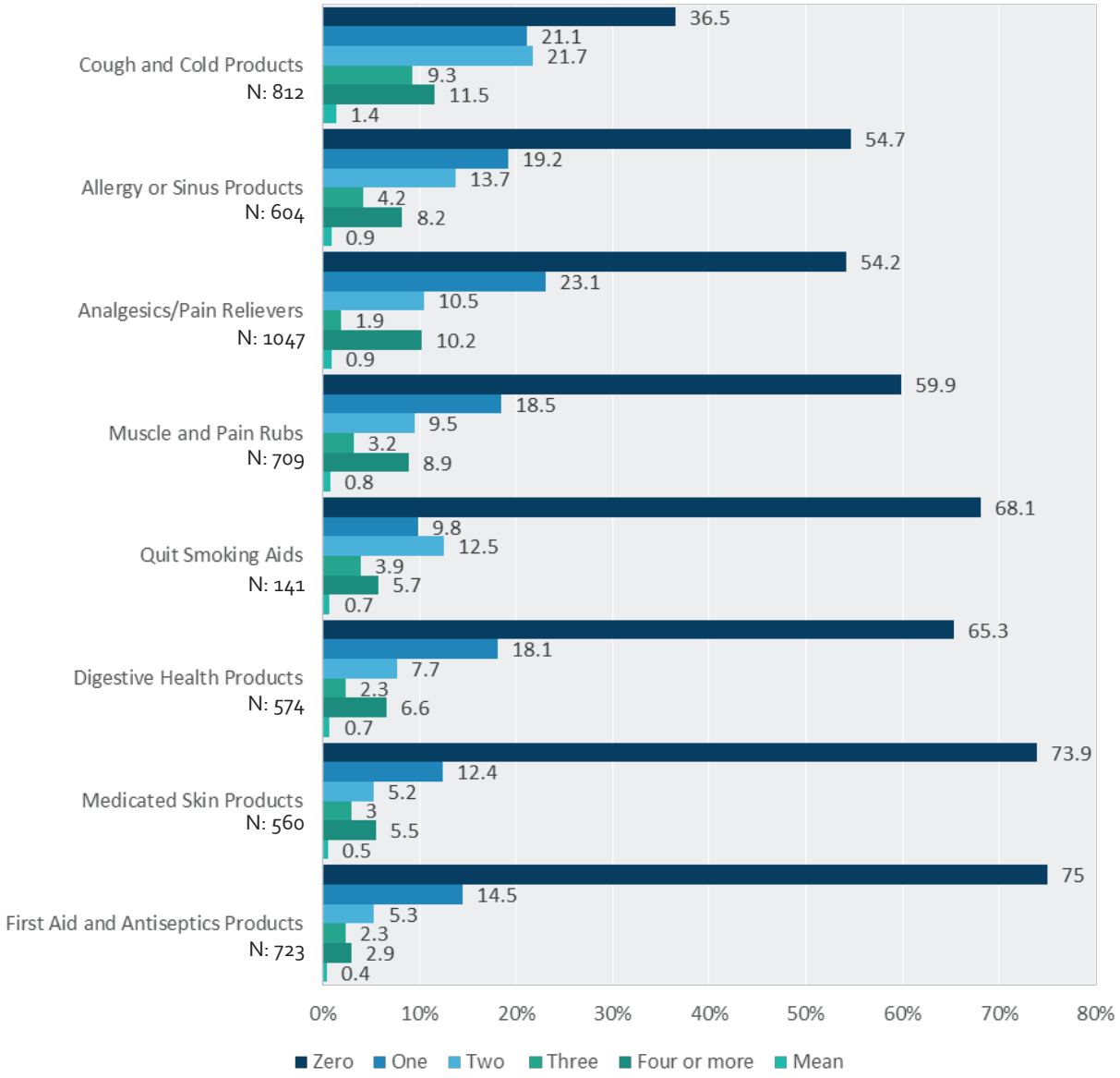


Figure 1.10: Days off work if OTC unavailable - by category

'Urgency of treatment' metric if OTC medicines were not available without prescription - adults

For the medicines below, could you have waited until your next doctor's appointment to get the prescription?

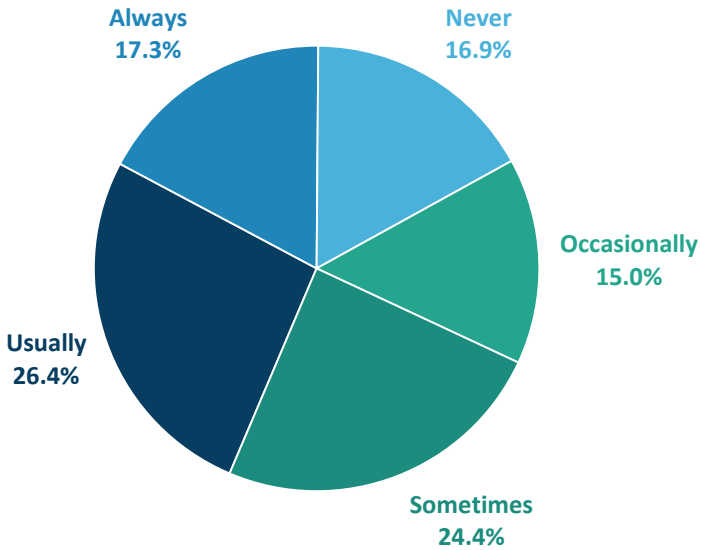


Figure 1.11: Ability to defer doctor visit if OTC unavailable - aggregate | N:1146

Approximately 16.9% of people surveyed said they can never wait for their next doctor's appointment to get the prescription, particularly if the relief they need is urgent such as an analgesic/pain reliever. In contrast, 17.3% of respondents reported that they can always wait for their next doctor's appointment especially if the medicine they need is first aid and antiseptics products. The results are mixed for quit smoking aids.

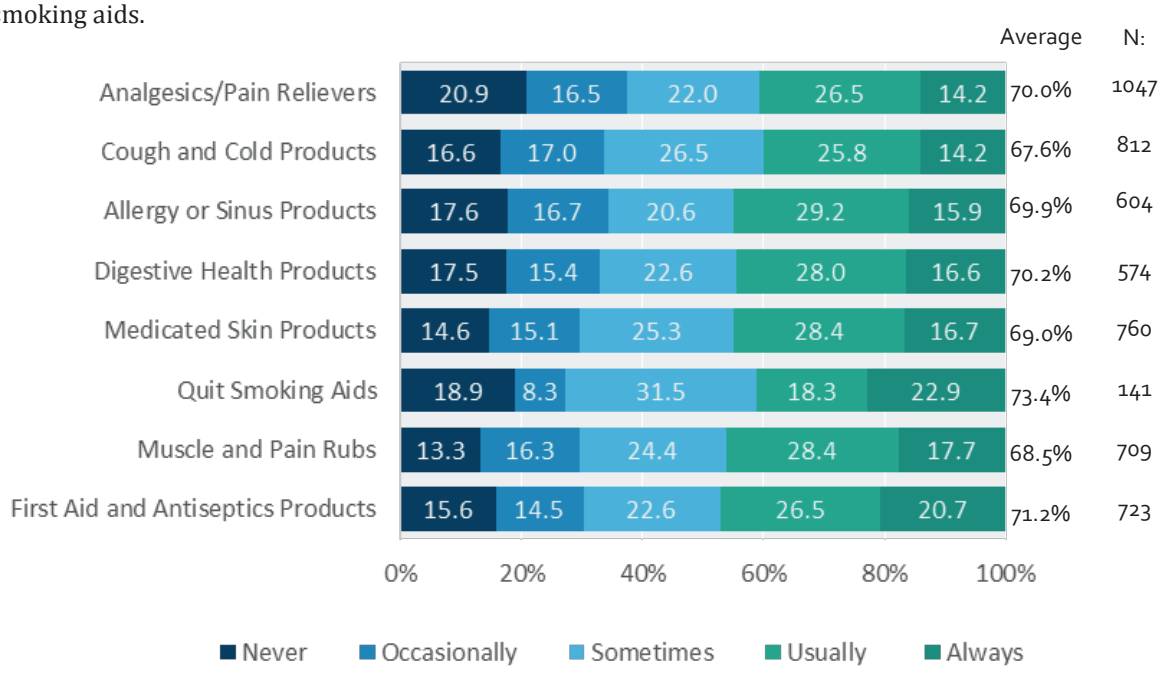


Figure 1.12: Ability to defer doctor visit if OTC unavailable - by category

The averages quoted to the right of the graph represent the position, from the left of the graph, of the mean "ability to defer" for their respective categories. They all lie between 67-72% and in all cases the average respondent reported that they could "usually" defer a visit to the doctor if the OTC medicine they wanted was unavailable.

1.2 Usage of OTC medicines by children/dependants

Of the total 1146 respondents only 807 reported on children or dependants.

Usage of OTC medicines in the last month

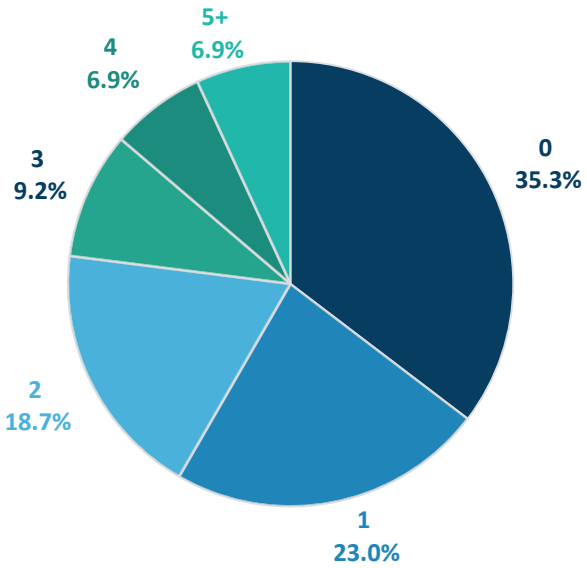


Figure 1.13: OTC usage by children/dependants in the last month | N:807

Of the children and dependants in the survey, 65% used an OTC medicine once or more in the last month.

Usage of OTC medicines in the last year

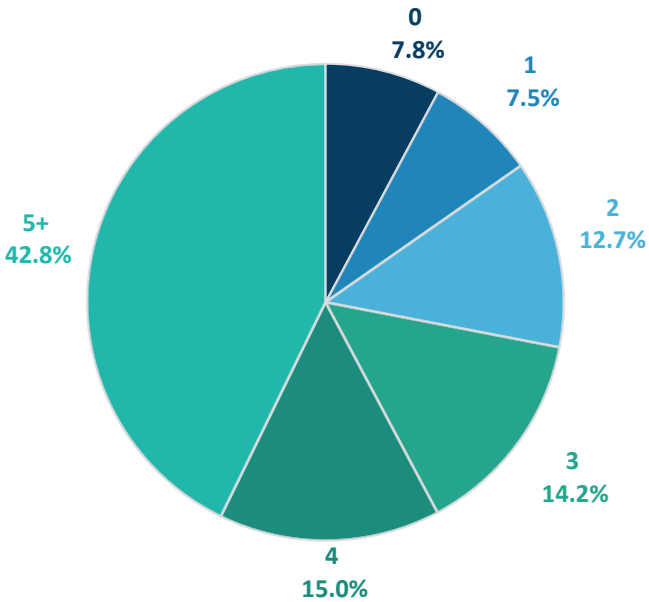


Figure 1.14: OTC usage by children/dependants in the last year | N:807

58% of children and dependants had used an OTC four or more times in the last twelve months, while only 7.8% had not used an OTC for their child/dependant in the last year. Children and dependants tended to use five or more OTC medicines, taking up 42.8% of all use.

Penetration of child population - tables by category

When did your children (child under 18) or family member last take this type of medicine?

Analgesics/pain relievers are the main medicine that has been taken by children/dependants (supervised by a primary person), within the last month. Similarly, cough and cold medicine has been the main medicine taken within the last two to twelve months. In contrast, the majority of respondents in this sample (80.3%) have never taken a quit smoking medicine. Given the age limitation on these products, this low penetration is not surprising.

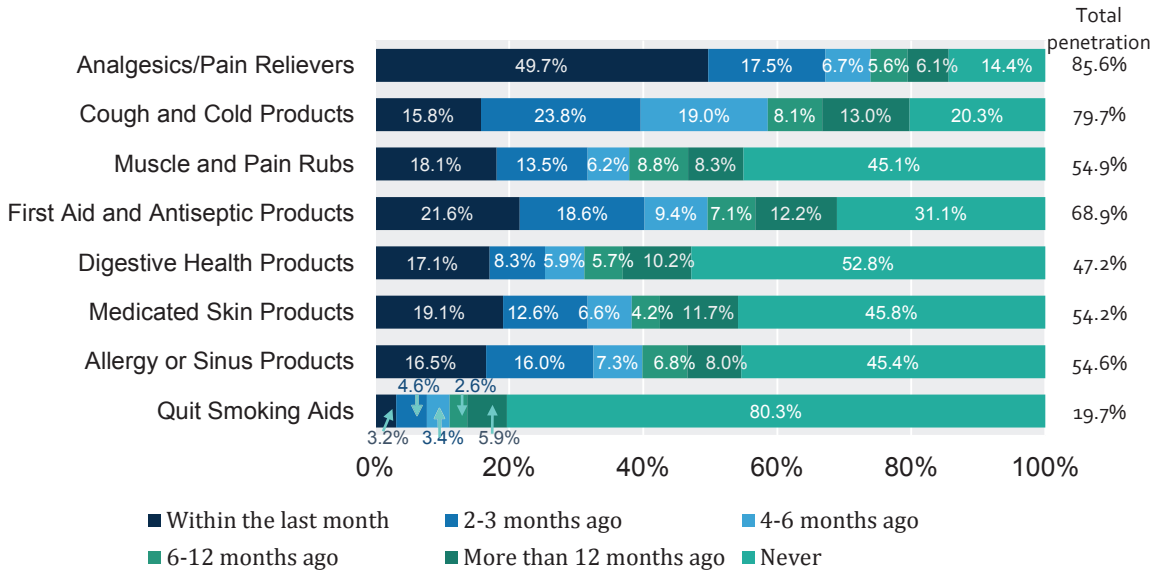


Figure 1.15: Incidence of usage by children/dependants - by category | N:807

Average frequency of use – adults vs. children/dependants

On average over the last 12 months, how many times did your children/dependants take a particular type of medicine to treat that type of illness or condition?

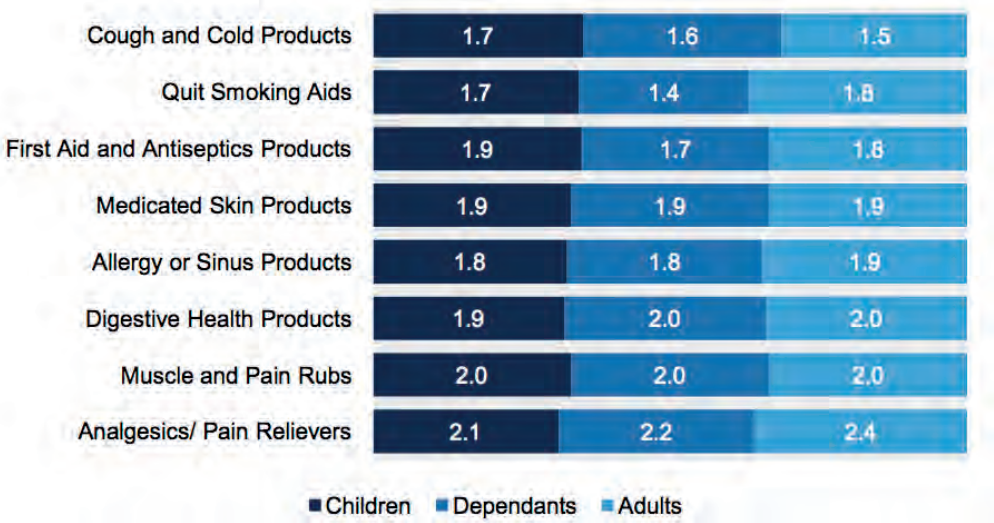


Figure 1.16: Average frequency of use by category – children/dependants vs. adults

Analgesic/pain relievers are slightly more prevalent among adults compared to their children and dependants. By contrast, although the difference is only small, the usage of cough and cold products and first aid and antiseptics products is higher among children.

Usage duration by category

For how long did your children/dependants usually take these medicines?

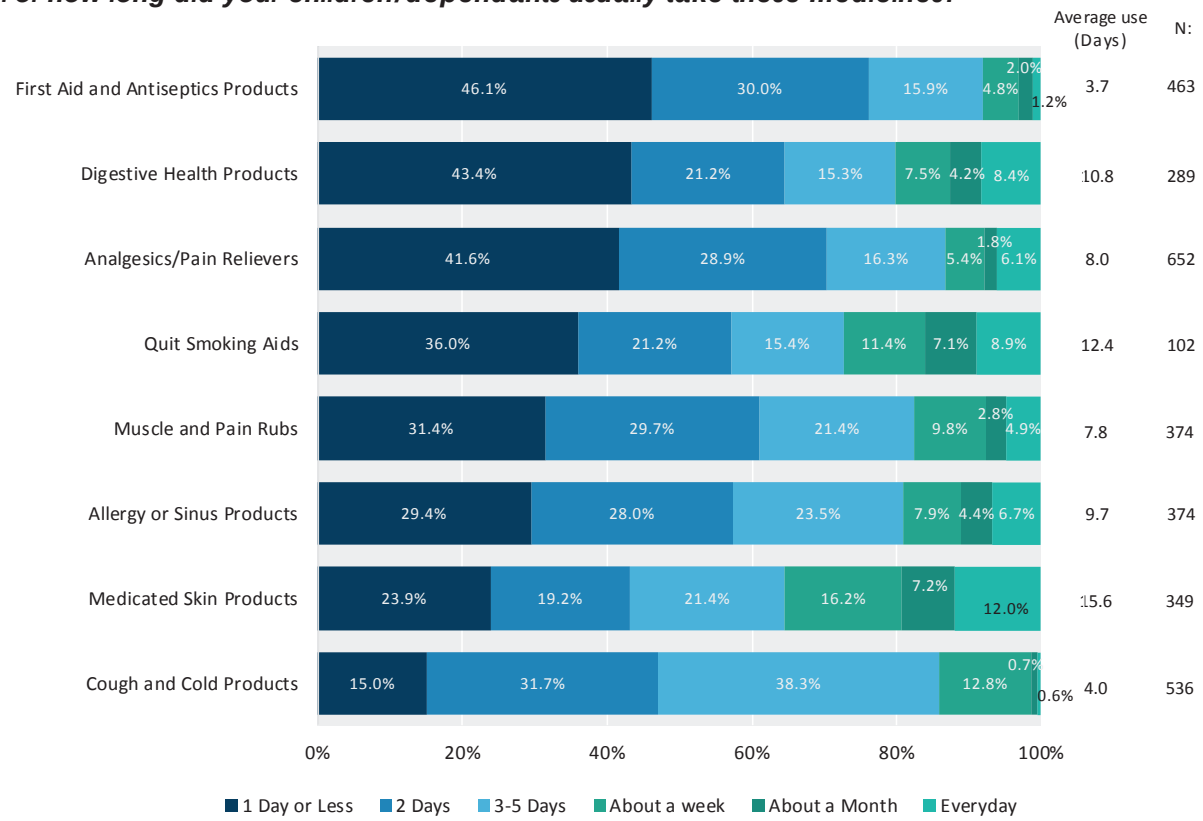


Figure 1.17: Usage duration by children/dependants - by category

Retail split by category

Where did you buy the medicine for your child/dependant?

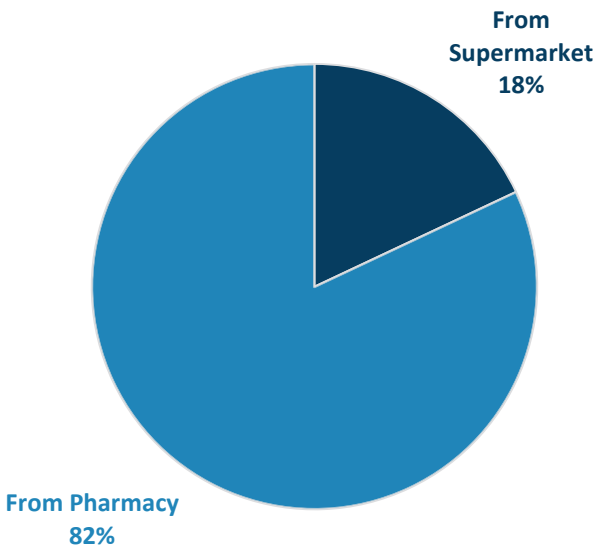


Figure 1.18: Retail split of OTC purchase bought for children/dependants- aggregate | N:807

The majority of medicines taken by children were bought from a pharmacy (82%). In only 18% of cases the medicine taken by children (mainly first aid and antiseptics products) was bought from a supermarket. Allergy or sinus and medicated skin products are two main products bought from a pharmacy as opposed to a supermarket.

Channel split – OTC purchases for children/dependants

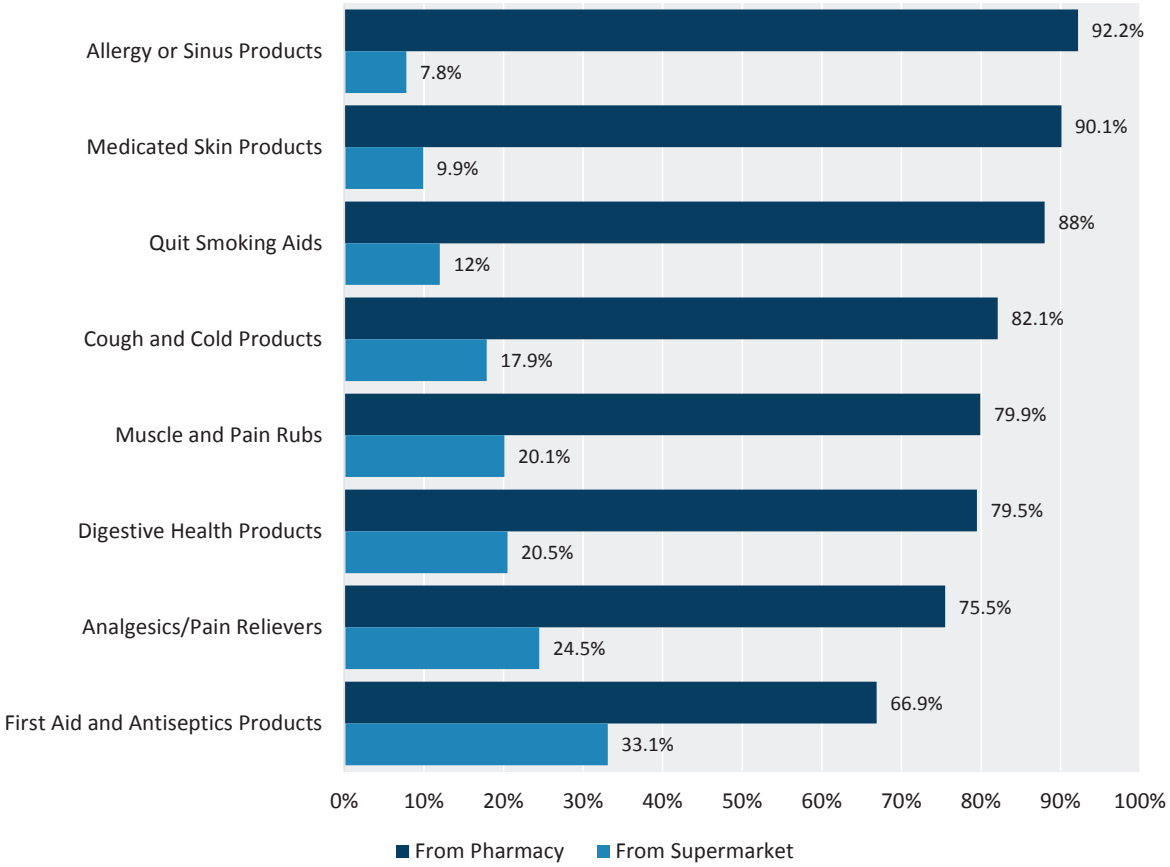


Figure 1.19: Retail split of OTC purchase bought for children/dependants - by category | N:807

Pharmacy appears to be the preferred retail channel for the majority of OTC purchases for children/dependants.

Alternative actions from restricting access to OTC medicines – Doctors' visits for children/dependants

If your child/dependant could not get the medicine they needed without a prescription, what would you do?

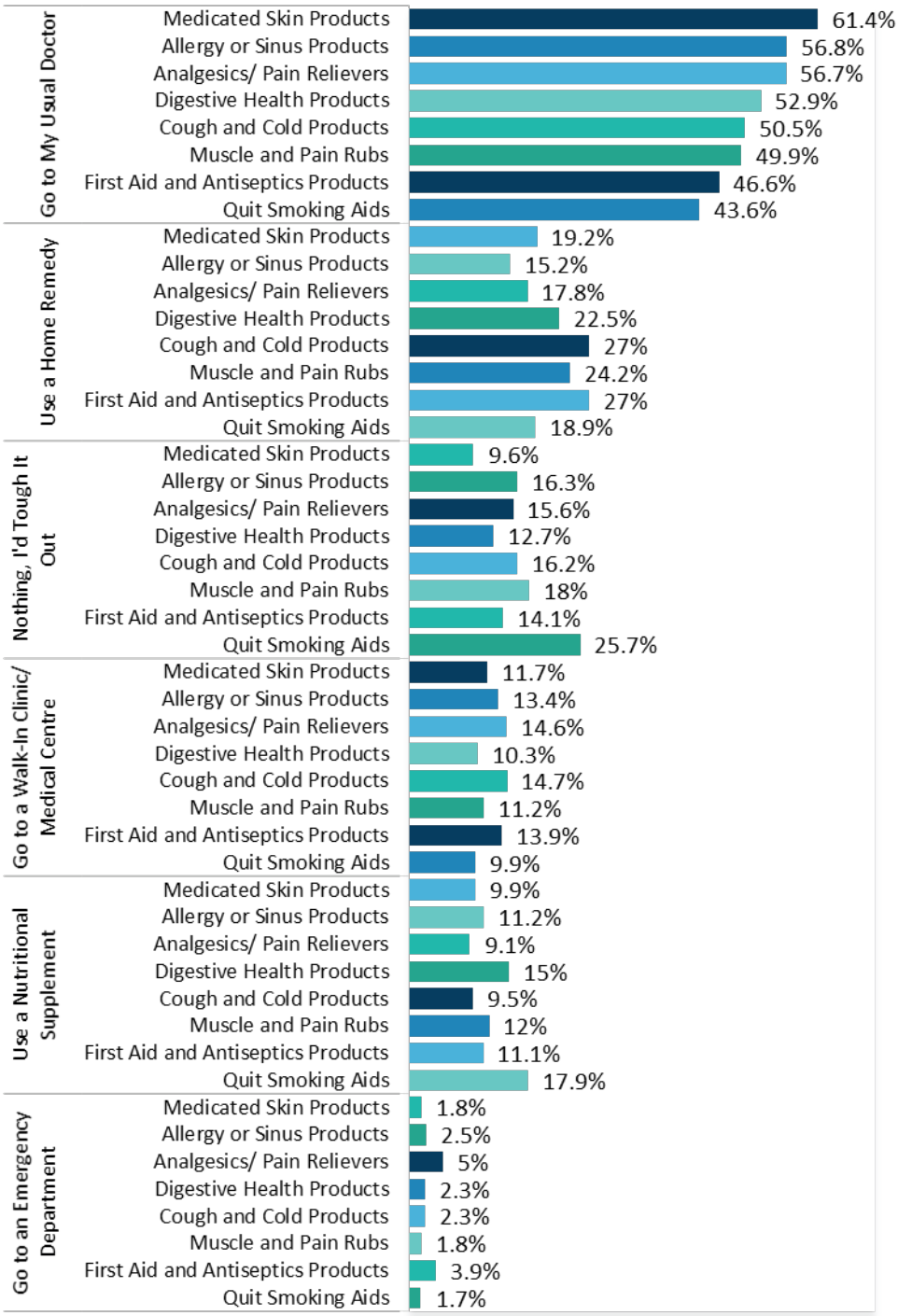


Figure 1.20: Alternative action if OTC unavailable for children/dependants – by category | N:807

The majority of respondents reported that they would visit their doctor if their children (or dependant family member) could not get the medicine they needed without a prescription. This applies particularly for medicated skin products, allergy or sinus and analgesics/ pain relievers. For all different types of medicines, going to an emergency department is the least likely approach.

Estimated time off school if OTC medicines were not available without prescription

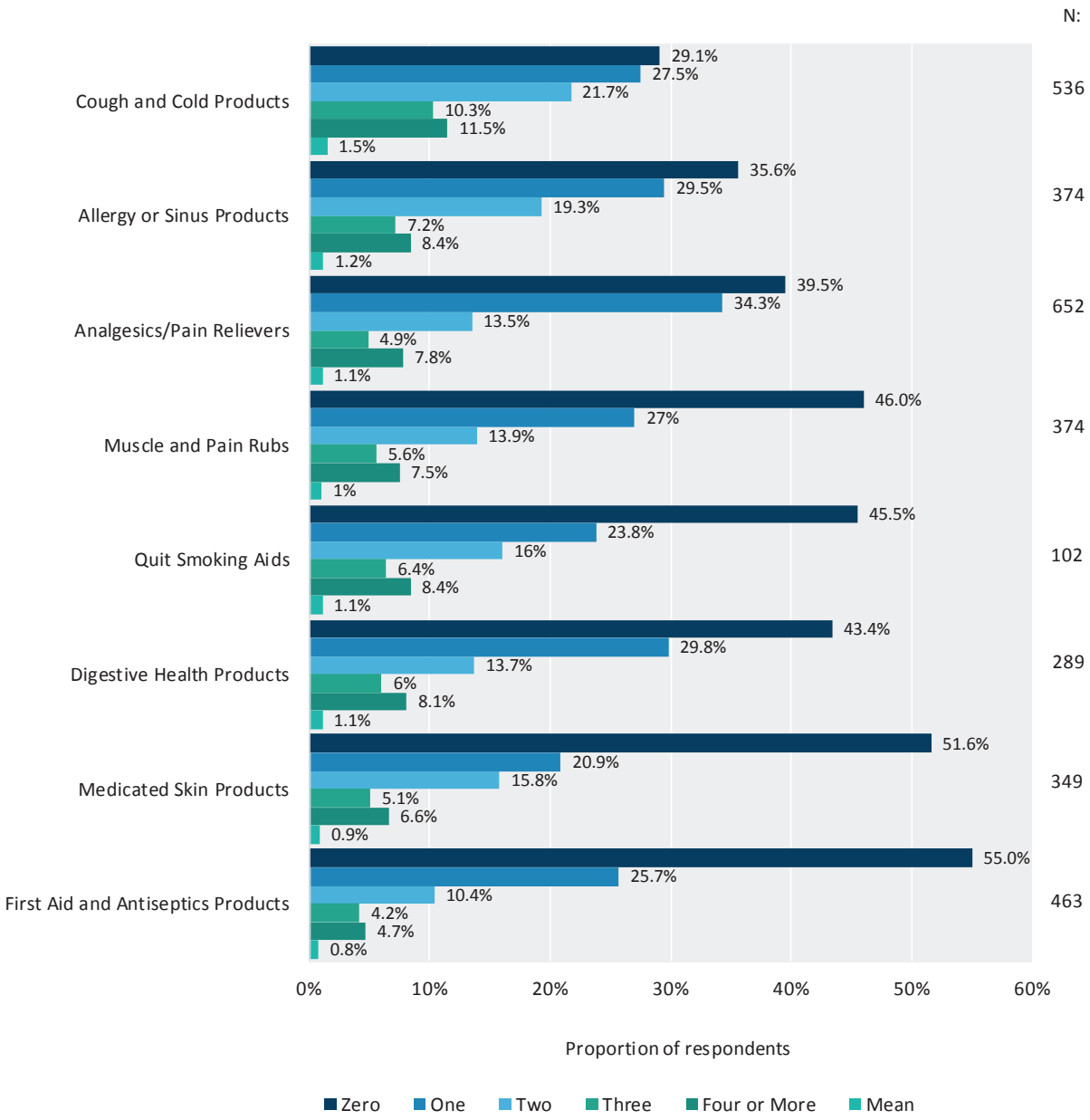


Figure 1.21: Days off school if OTC is unavailable –by category

If an OTC solution was unavailable, the most impacted condition is cough and cold, with 45% taking two or more days off school. While children are least likely to miss school due to the lack of access to first aid and antiseptic products (55%) and medicated skin products (51%), the main reason to be off from school for just one day would be in response to no OTC availability of analgesics/pain relievers at 34%, followed by digestive health at 30%.

Estimated time off work for parent/carer if OTC medicines were not available without prescription

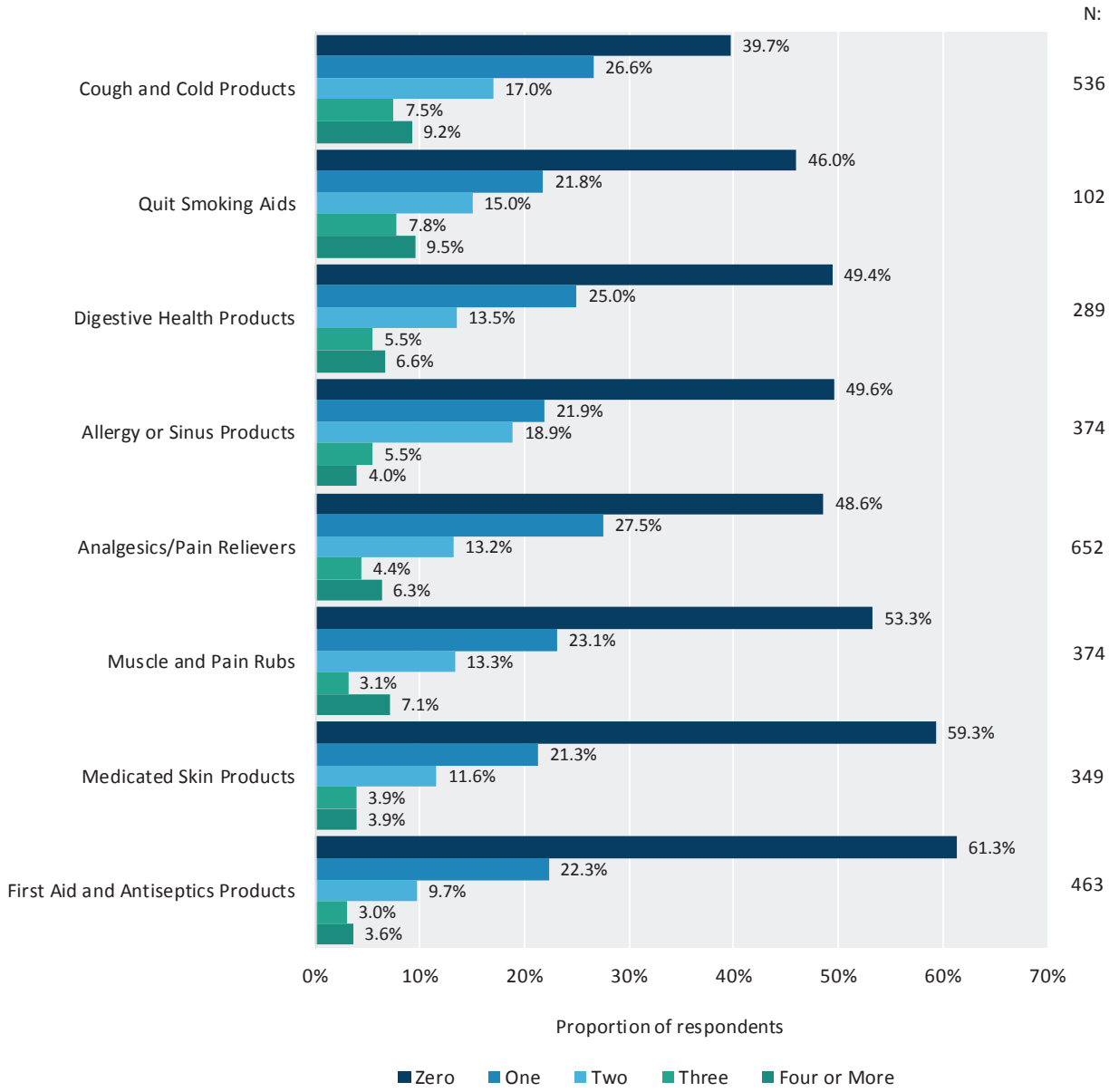


Figure 1.22: Days off work if child/dependant sick and OTC medicine unavailable - by category

The above chart identifies the corresponding time off work for the parent/carer when the child/dependant is suffering from a condition with no OTC option available.

No OTC available without prescription – adults vs. children/dependants

N (Adults)	604	1047	812	574	723	560	709	141
N(Children/Dependants)	374	652	536	289	463	349	374	102

Figure 1.23: Alternative action if OTC unavailable – adults vs. children/dependants – by category

In comparison, respondents are less likely to tough it out when it comes to their children and family members; instead they are more likely to visit their doctor when their children need a treatment, particularly if there is no OTC available.

'Urgency of treatment' metric if OTC medicines were not available without prescription – children/dependants

Could your children have waited until their next doctor's appointment to get a prescription?

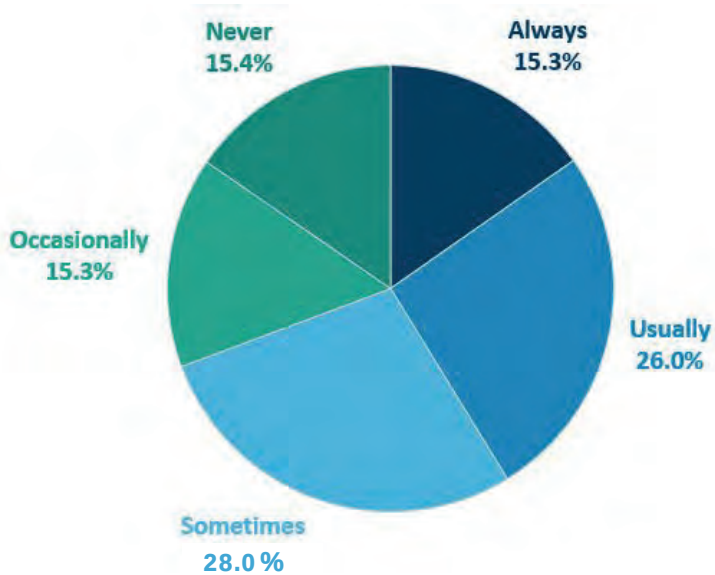


Figure 1.24: Ability to defer doctor visit if OTC unavailable – children/dependants | N:807

Similar to adult respondents, in around 85% of cases, children can to some degree wait until their next doctor's appointment.

1.3 Shopping Behaviour

Retail channel split as a proportion of population

Approximately what percentage of the time do you buy OTC medicines from a pharmacy or a supermarket?

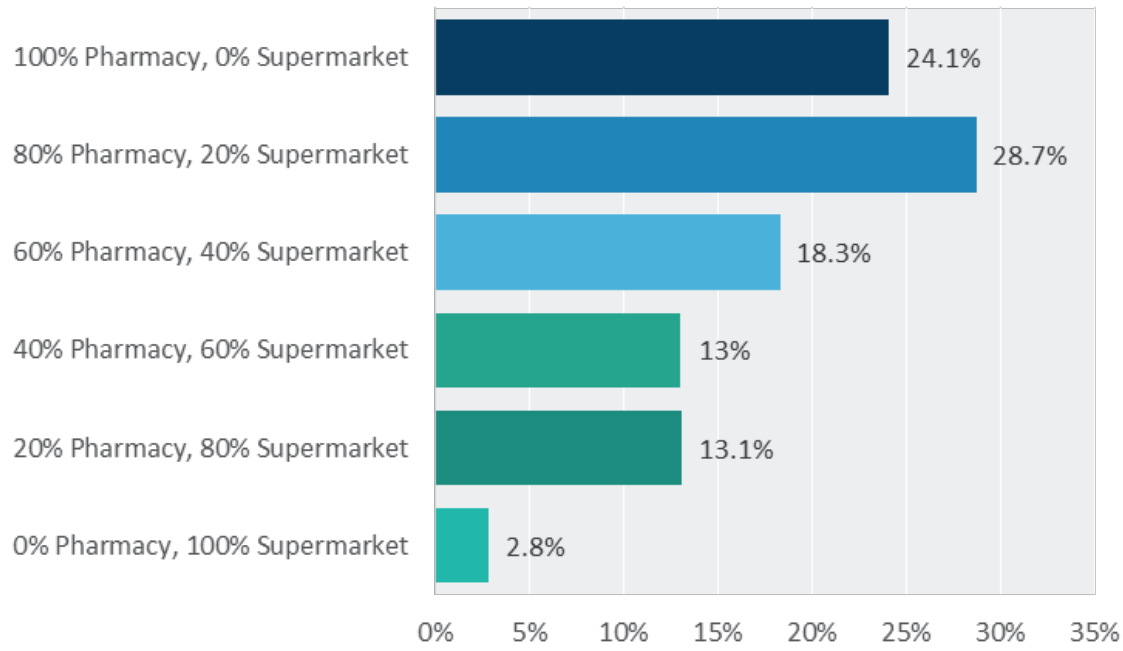


Figure 1.25: Retail channel split - pharmacy vs. supermarket - aggregate | N:1146

Pharmacy remains the main retail channel for OTC medicines. For 24% of people surveyed, pharmacy is the only channel of purchase (100% pharmacy, 0% supermarket). In contrast, only 2.8% of people buy OTC medicines exclusively from supermarkets.

Retail channel preferences by gender

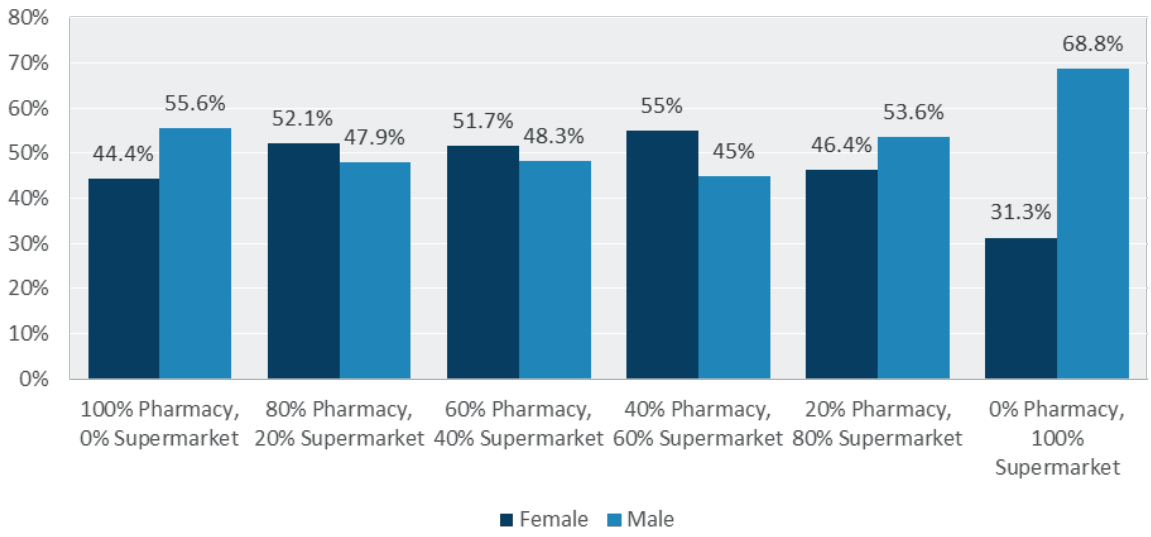


Figure 1.26: Retail channel split - pharmacy vs. supermarket - by gender | N:1146

On average, females are less likely to buy OTC medicines from supermarkets compared to males.

OTC purchases – immediate use vs. pantry stock

Approximately what percentage of the time do you buy OTC medicines because you need them immediately as opposed to because you are stocking the pantry?

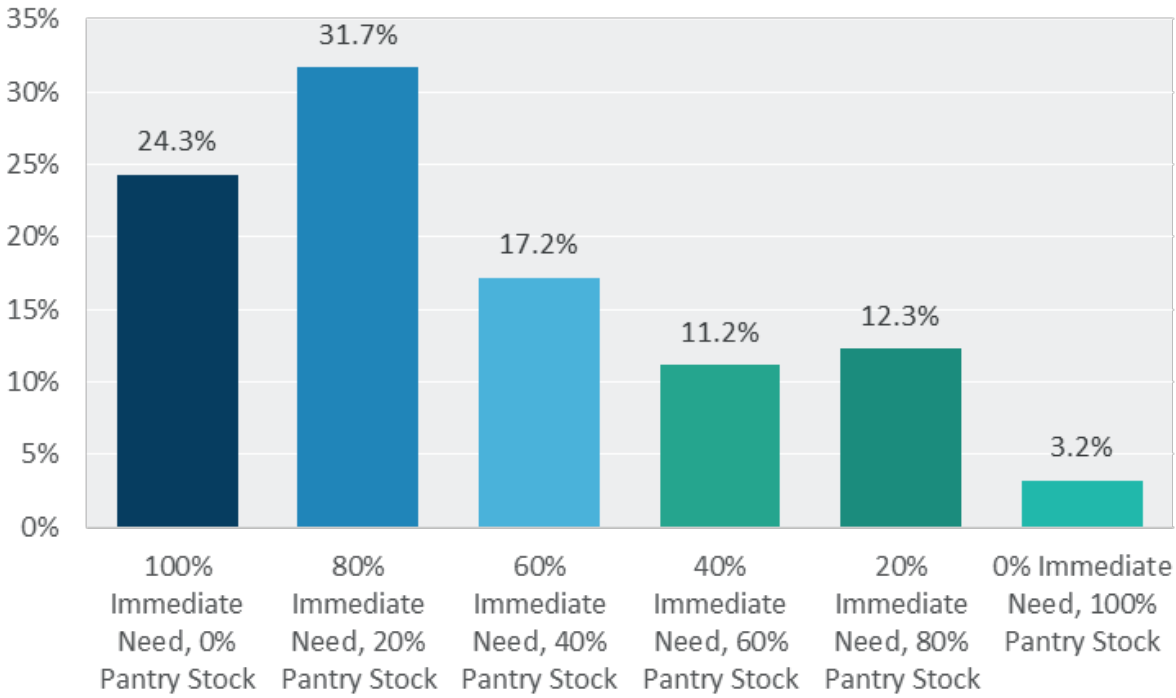


Figure 1.27: OTC purchases – immediate need vs. pantry stock | N:1146

Overall, immediate need is the main reason to buy OTC medicine.

1.4 Examining the attitudes of Australian OTC shoppers

Respondents were also asked their general attitudes toward OTC medicines. They were asked to either agree or disagree with 55 statements about OTC medicines. The response scale ranged from strongly agree to strongly disagree. These attitudes are listed below in order from the most agreed to statements to the least agreed to statements, with the aggregated response marked by a light blue line. The main influences in choosing an OTC medicine are packet directions on usage and dosage, family recommendations, pharmacy staff advice and accessibility.

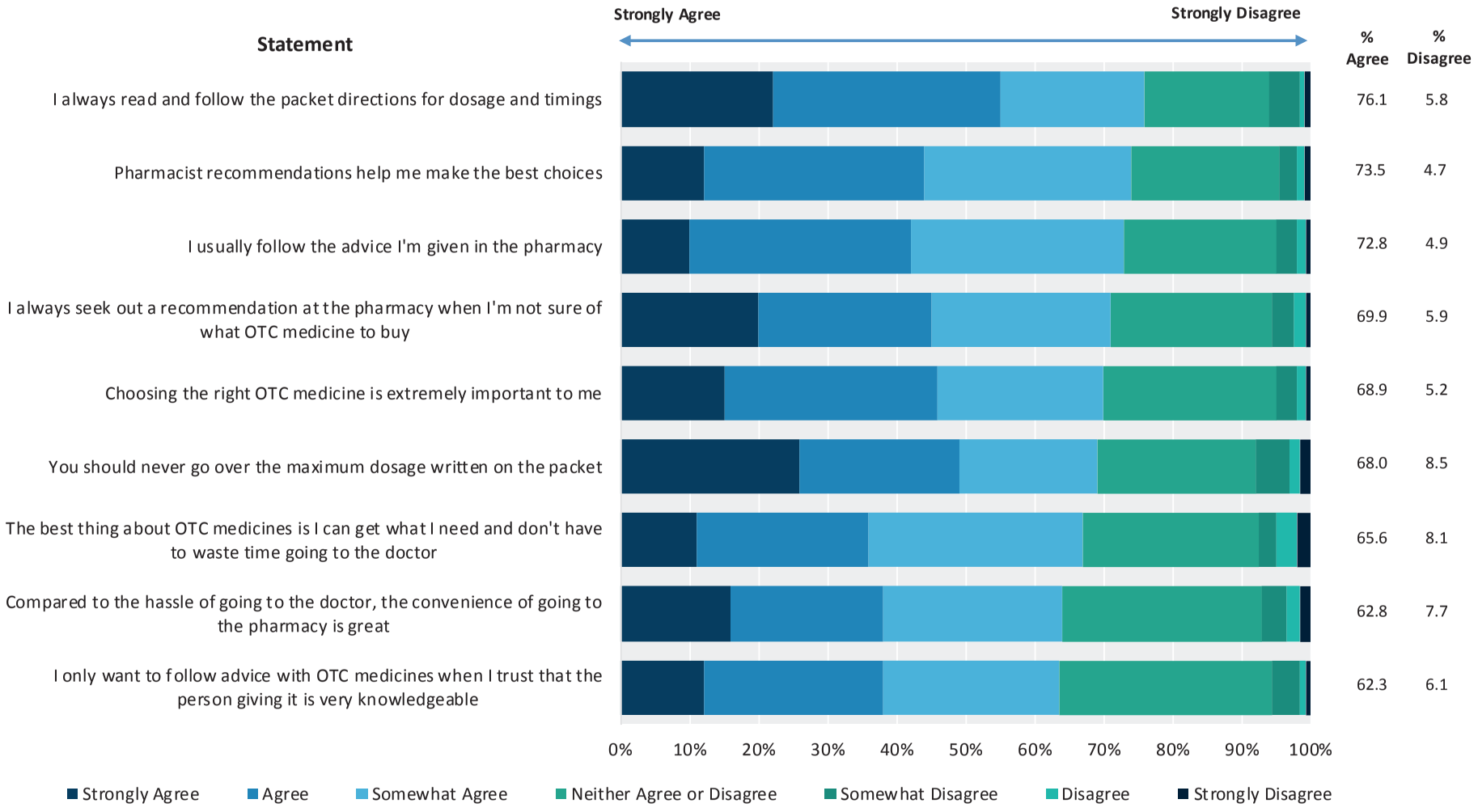


Figure 1.28: Attitudes towards OTC medicines (1/5) | N: 1146

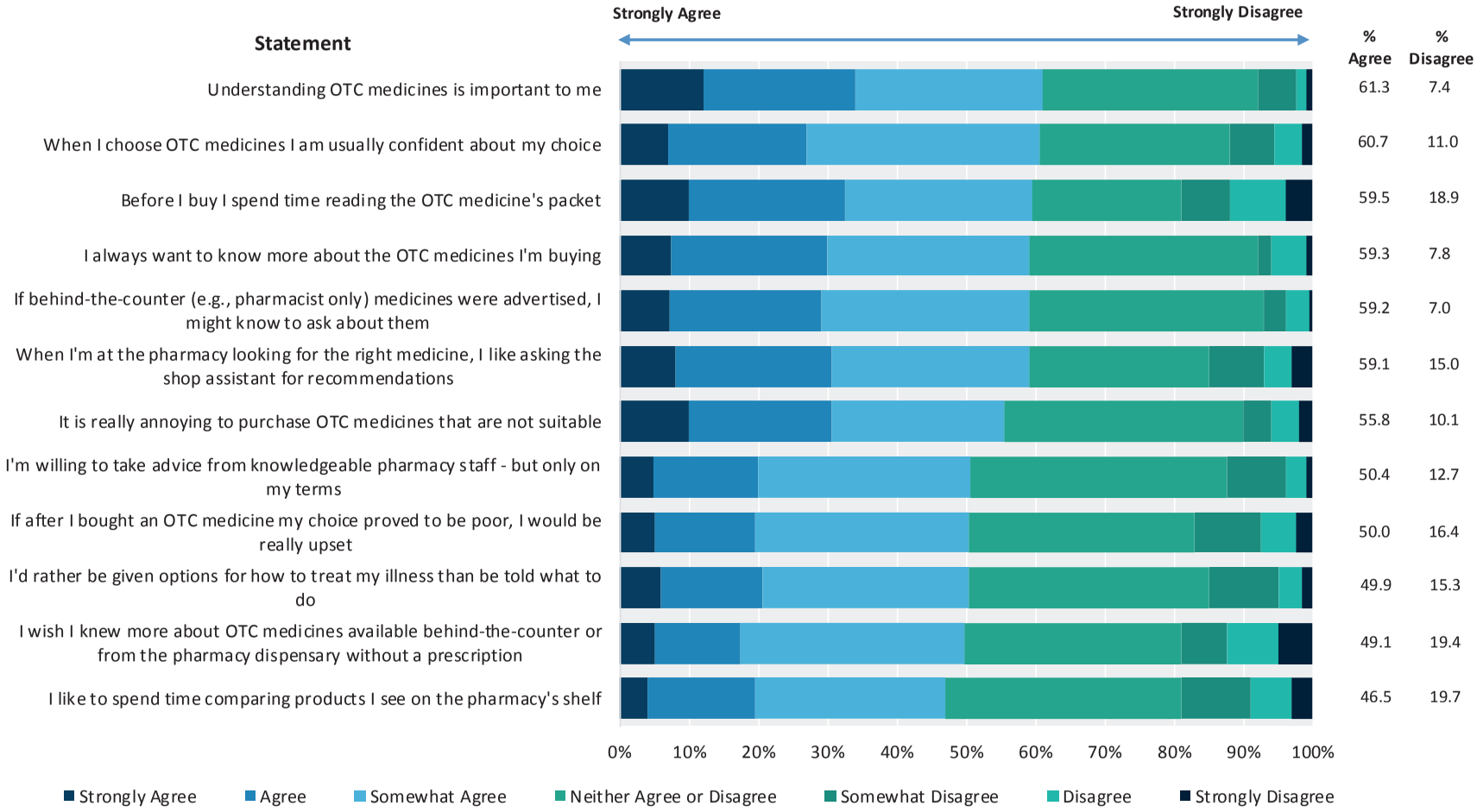


Figure 1.29: Attitudes towards OTC medicines (2/5) | N:1146

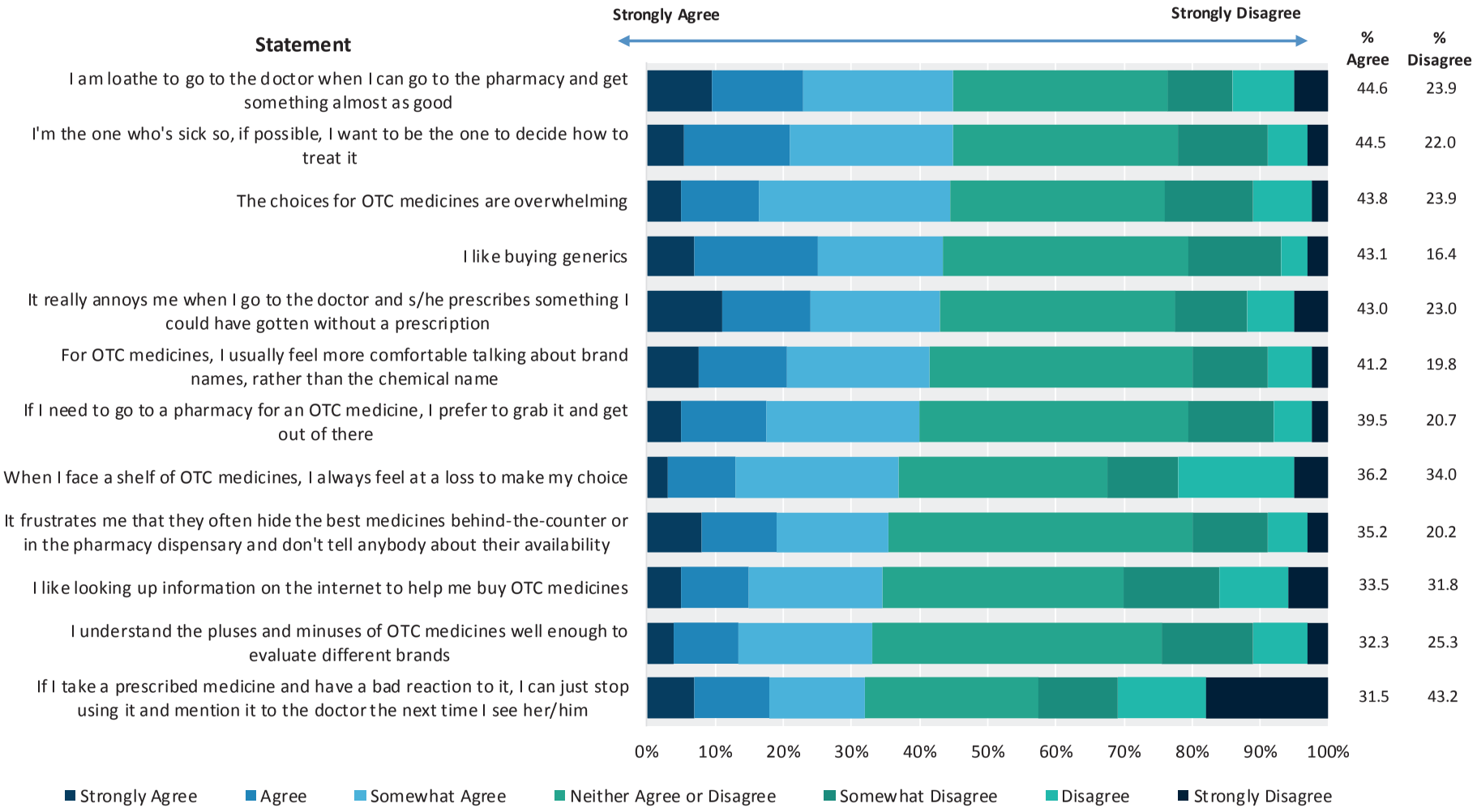


Figure 1.30: Attitudes towards OTC medicines (3/5) | N: 1146

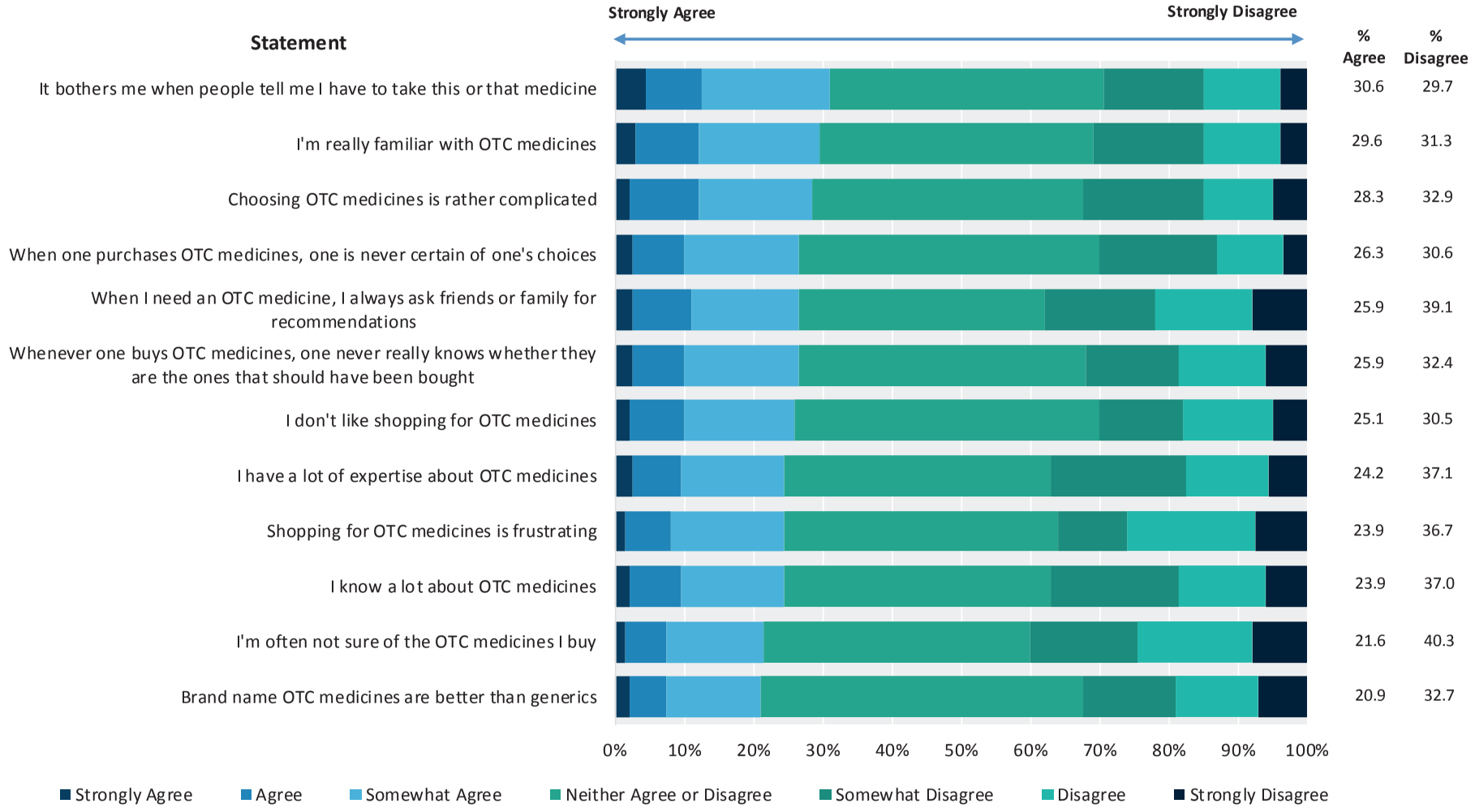


Figure 1.31: Attitudes towards OTC medicines (4/5) | N: 1146

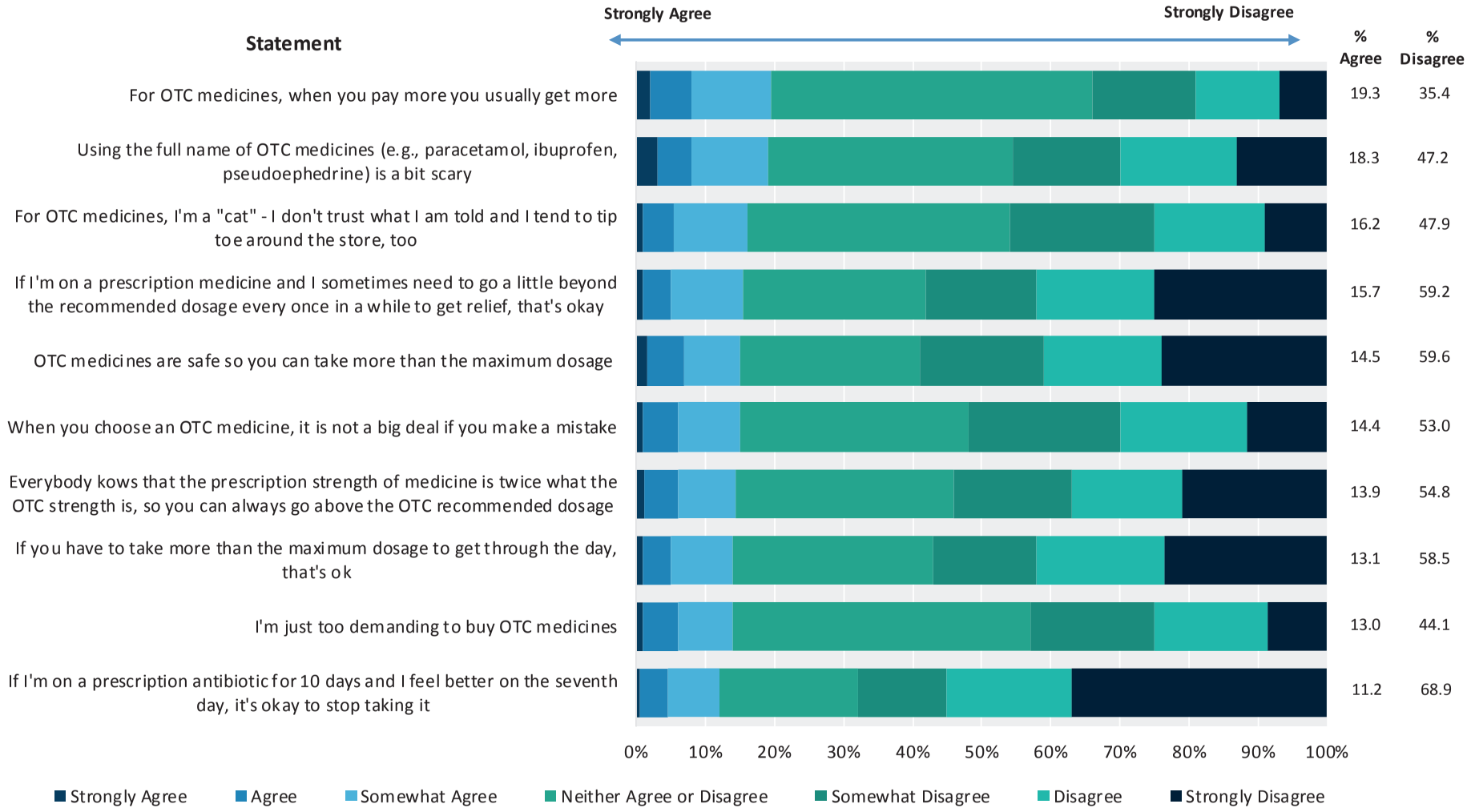


Figure 1.32: Attitudes towards OTC medicines (5/5) | N: 1146

SECTION 2:

How do consumers use vitamins, minerals and supplements?

2.1 Penetration and usage of VMS products by adults

Usage of VMS in the last year

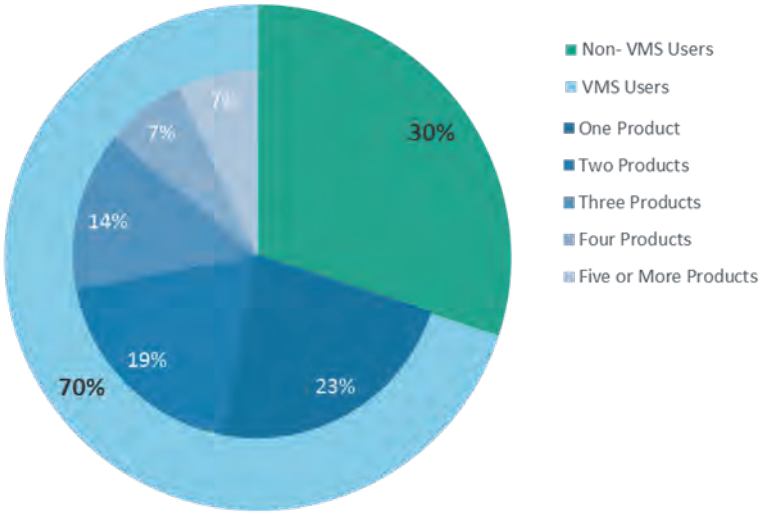
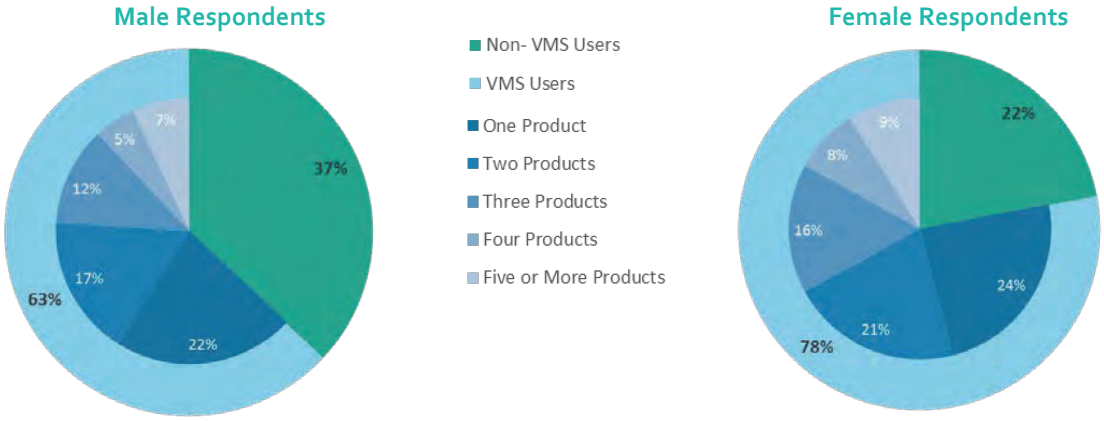


Figure 2.1: Number of VMS used | N:1146

70% of respondents have used VMS products in the last year, with 47% using 2 or more types.

VMS usage by gender



Figures 2.2/2.3: Penetration and number of VMS by gender | N:1146

Usage of VMS in the last year is higher amongst females at 78% versus males at 63%. Usage of multiple VMS products (2 or more) is also higher amongst females at 54% versus 41% for males.

VMS users split by age

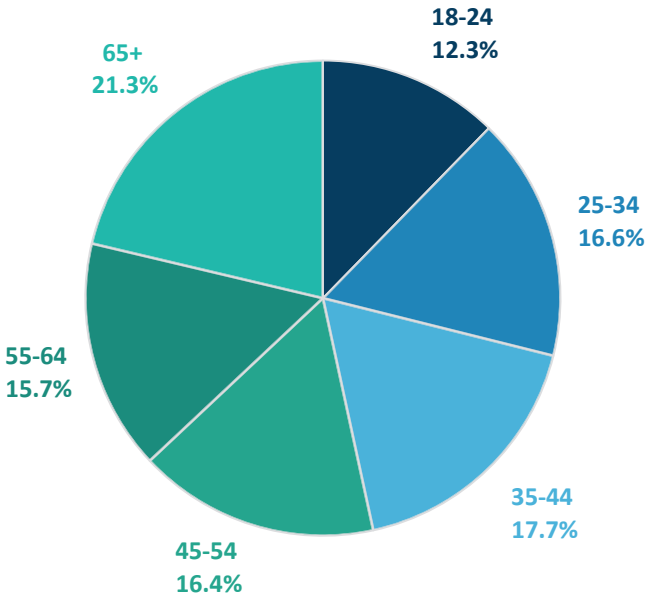


Figure 2.4: Penetration of VMS users by age | N:802

37.0% of respondent VMS users were aged 55 or over, compared with 33.4% of the Australian population being in this age group.

Usage of VMS by age group

The following charts depict the usage of VMS products within discrete age groups. Usage of VMS is fairly consistent across all age groups, the overall penetration range being 65 – 73%. Each figure in this set of charts is based on N:1146.

Ages 18-24

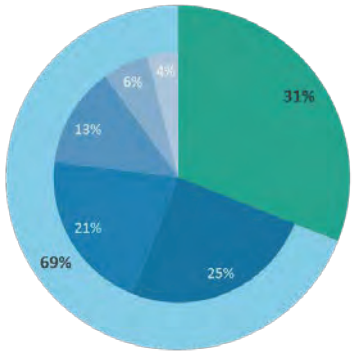


Figure 2.5: Usage of VMS by ages 18-24

Ages 25-34

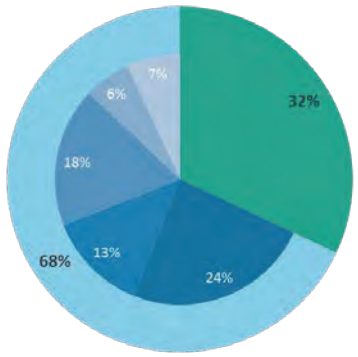


Figure 2.6: Usage of VMS by ages 25-3

Ages 35-44

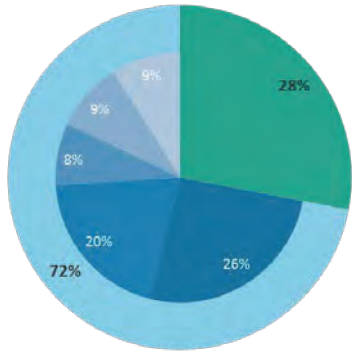
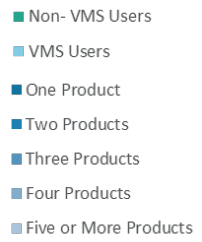


Figure 2.7: Usage of VMS by ages 35-44



Ages 45-54

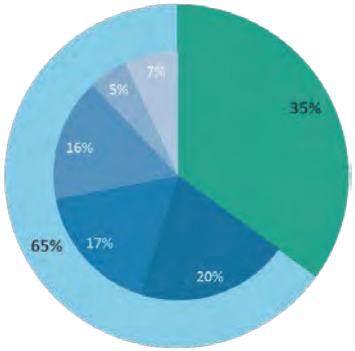


Figure 2.8: Usage of VMS by ages 45-54

Ages 55-64

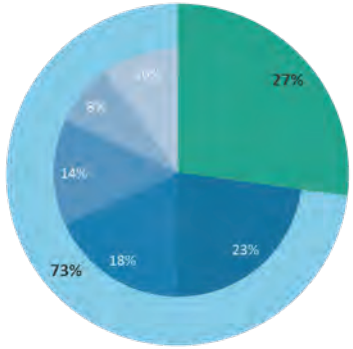


Figure 2.9: Usage of VMS by ages 55-64

Ages 65+

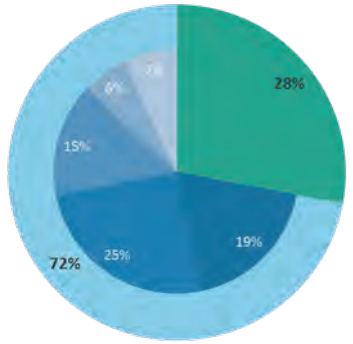


Figure 2.10: Usage of VMS by ages 65+

VMS usage by education level

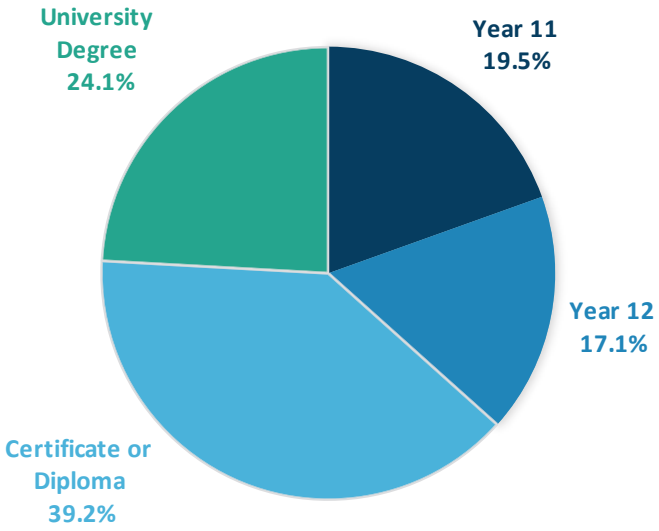


Figure 2.11: Penetration of VMS users by education | N:802

63.3% of respondent VMS users had a post-secondary education, compared with 33.1% of the Australian population being at this education level.

Penetration and number of VMS products used by education level

The following charts depict the usage level of VMS products within education levels. Usage of VMS is high among all groups (66 – 75%), with the highest usage amongst university graduates at 75%. Each figure in this set of charts is based on N:1146.

University Degree

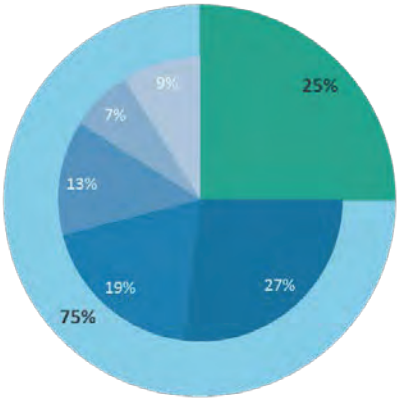


Figure 2.12: Usage of VMS - University Degree

Certificate or Diploma

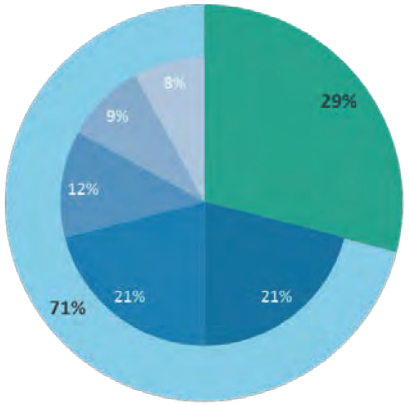
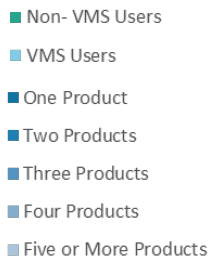


Figure 2.13: Usage of VMS - Certificate or Diploma



Year 12

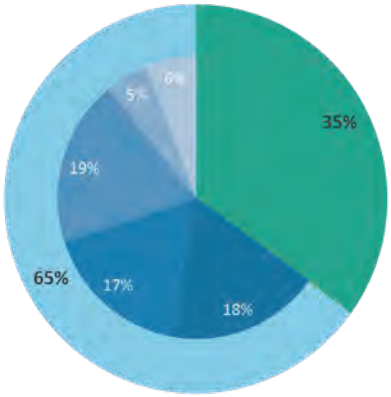


Figure 2.14: Usage of VMS - Year 12

Year 11

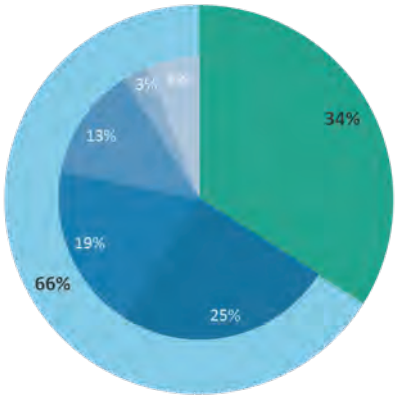


Figure 2.15: Usage of VMS – Year 11

Overall VMS usage by product category – among total respondents

Do you take any health or nutritional supplements?

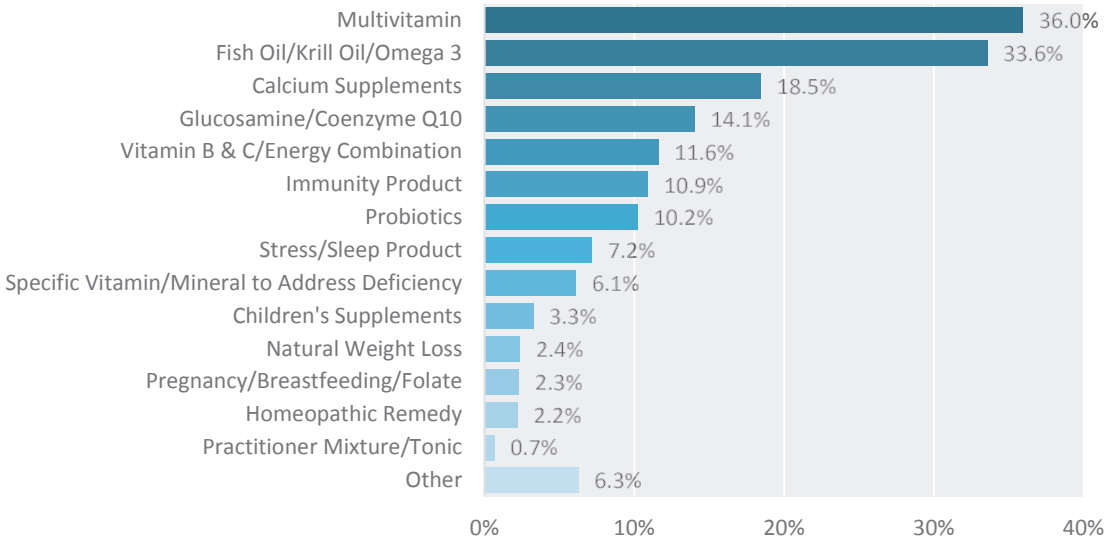


Figure 2.16: VMS products used among total respondents | N:1146

Among total respondents, multivitamins and fish oil/krill oil/omega 3, are the major two types of VMS taken at 36.0% and 33.6% respectively. This is followed by calcium supplement and glucosamine at 18.5% and 14.1%.

Overall VMS usage by product category – among VMS users

What health or nutritional supplements do you take?

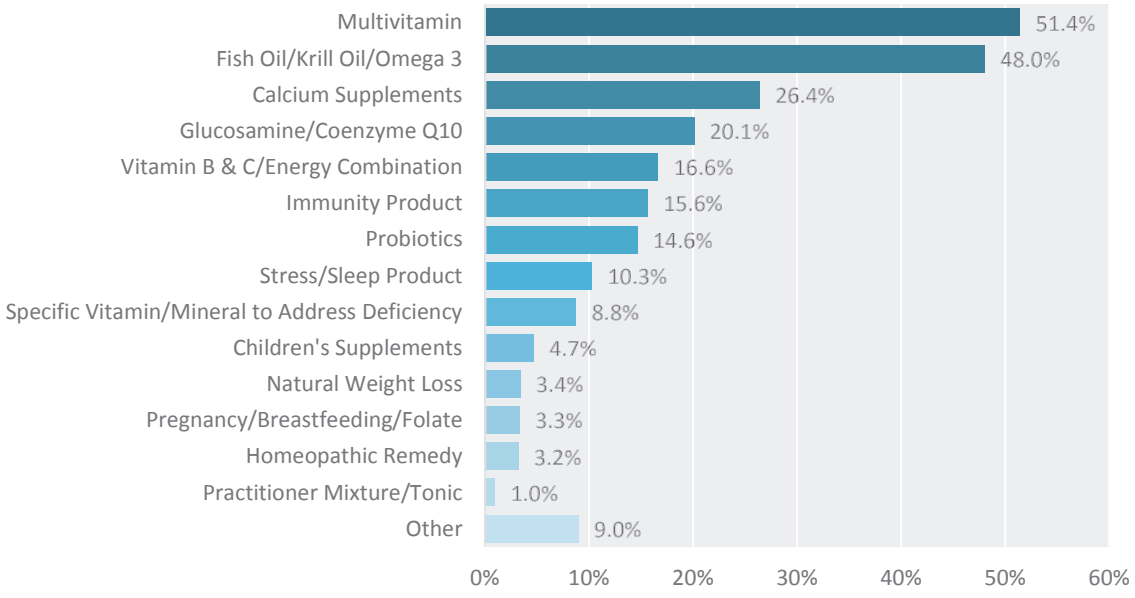


Figure 2.17: VMS products used among VMS users | N:802

Among VMS users, multivitamins and fish oil/krill oil/omega 3 are the major two types of VMS taken, at 51.4% and 48.0% respectively.

2.2 Frequency of VMS usage by product category

How often do you take these supplements?

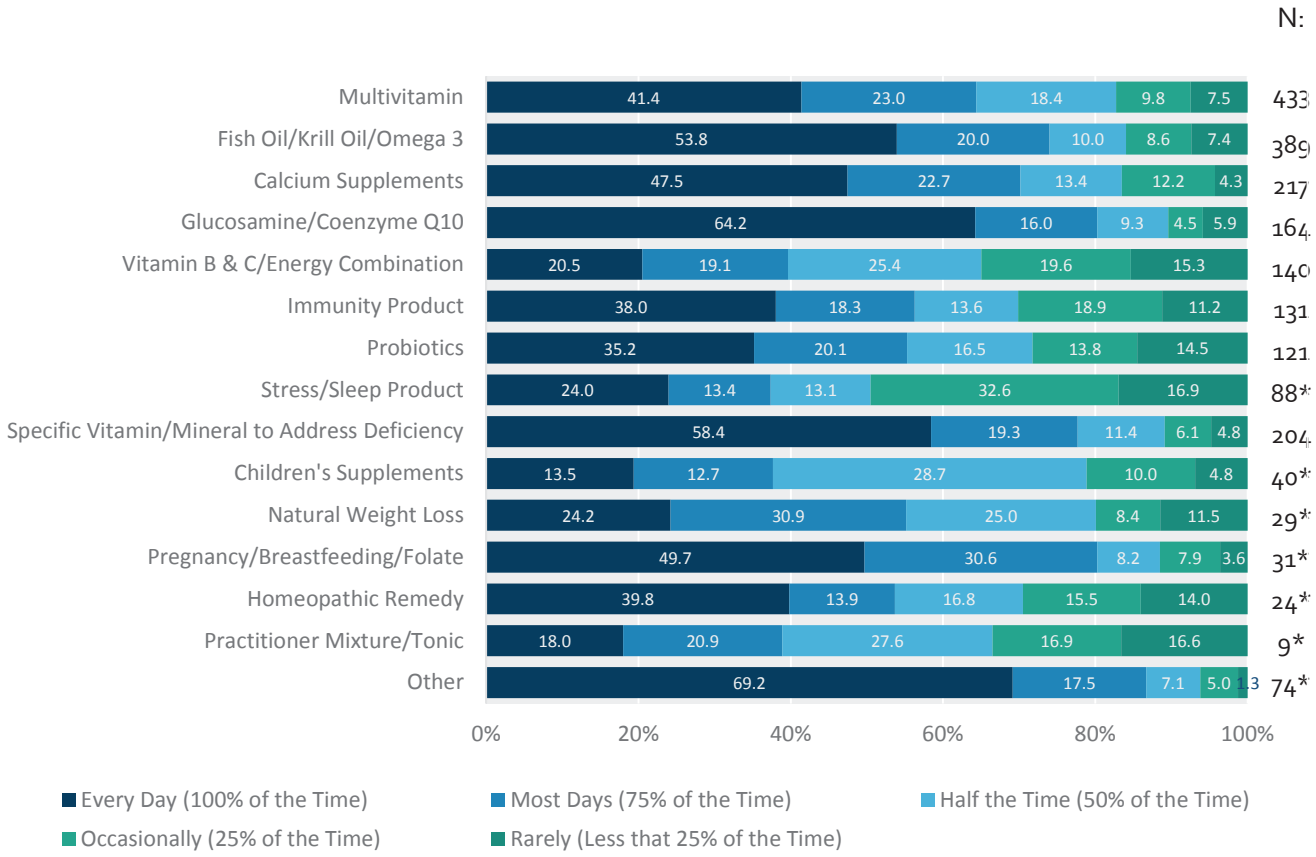


Figure 2.18: VMS frequency of usage by VMS product

The majority of users of glucosamine/coenzyme Q10 and specific vitamin/mineral supplements take those products on a daily basis at 64.2% and 58.4% respectively. While pregnancy/breastfeeding and natural weight loss medicine are taken most days, stress/sleep products and children's supplements are among the type of supplements that respondents reported taking only occasionally. * Please note however that in cases where the sample size is less than 100, it is difficult to make meaningful extrapolations to the general public.

Frequency of VMS usage by gender

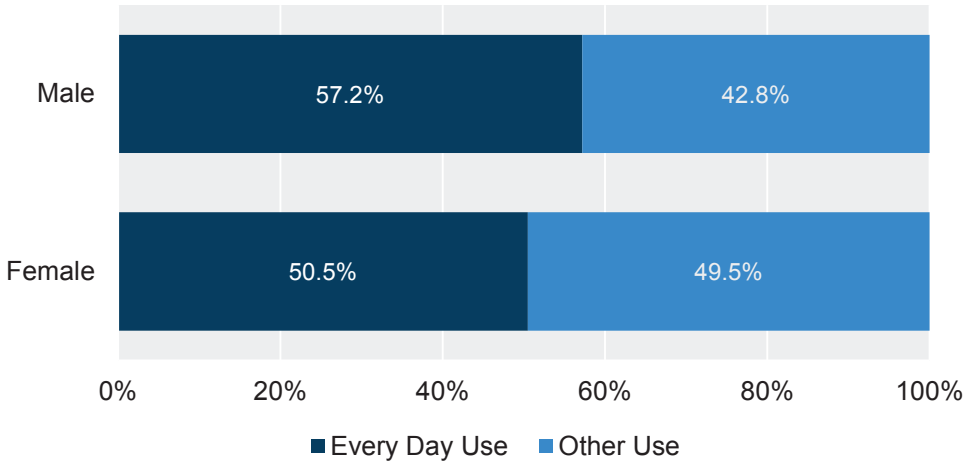


Figure 2.19: VMS frequency of usage by gender | N:802

At 57.2% of men versus 50.5% of women, men tend to be more likely than women to use VMS products on an every-day basis.

Frequency of VMS usage by education

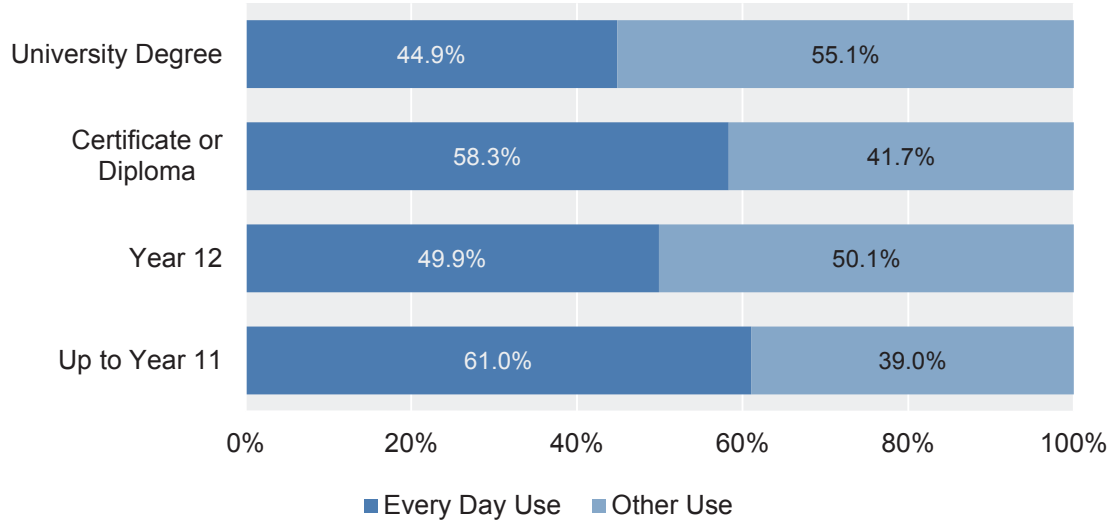


Figure 2.20: VMS frequency of usage by highest education level | N:802

While the data collected in this study shows no obvious trend in frequency of use by education, more complex ANOVA models by the author do show a positive effect of education on VMS use.

Frequency of VMS usage by age

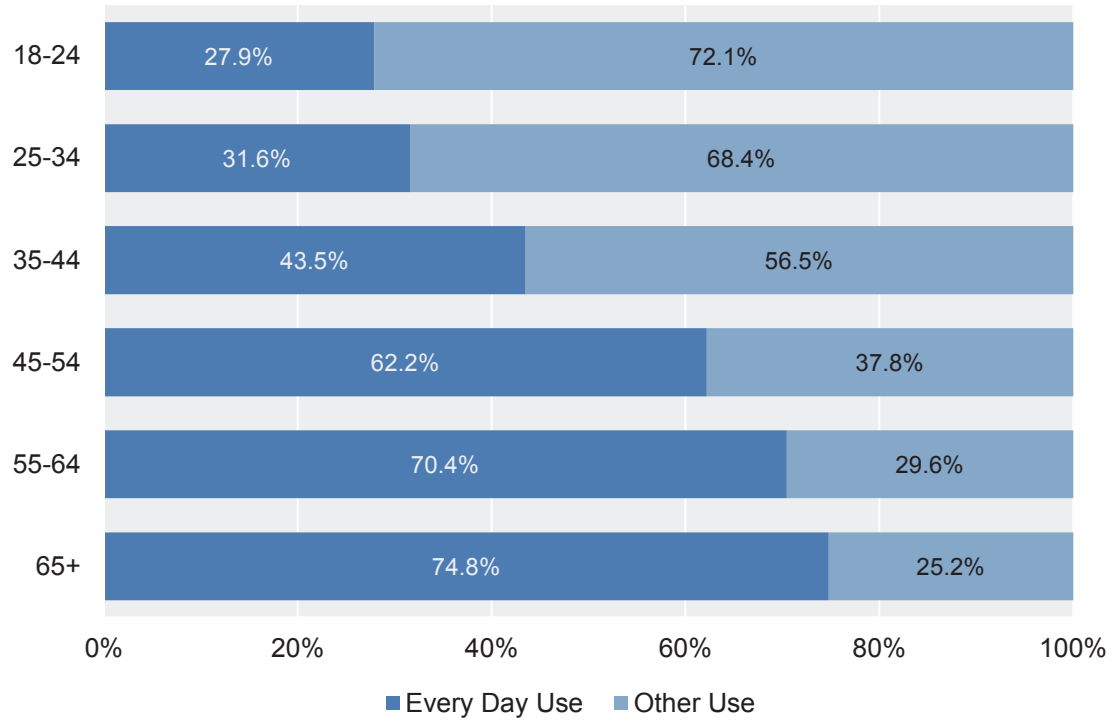


Figure 2.21: VMS frequency of usage by age | N:802

Every day use of VMS products is more common among people aged 65 and over. At 74.8% compared with 27.9%, this is almost three times the frequency of usage by people aged 18-24.

Note that in Figures 2.19, 2.20 and 2.21, "Other Use" includes most days, half the time, occasionally and rarely. Further detailed breakdown of usage is contained in the charts in Appendix A.

2.3 Reasons for VMS usage

People mainly take supplements for general health. People do however take specific supplements for specific reasons - for example stress/sleep products to help with stress and natural weight loss supplements for weight loss. *Note that the analysis in this figure is based on 2010 responses reported by 802 VMS users.

Across a variety of VMS products, the major motivation for use is general health. Respondents were allowed to select multiple reasons and they often selected more than one reason. Specific VMS products have a pattern of motivations for use that are specific to them. For example, respondents reported taking immunity products for both general health and to boost immunity.

For what reasons do you use vitamins, minerals and supplements?

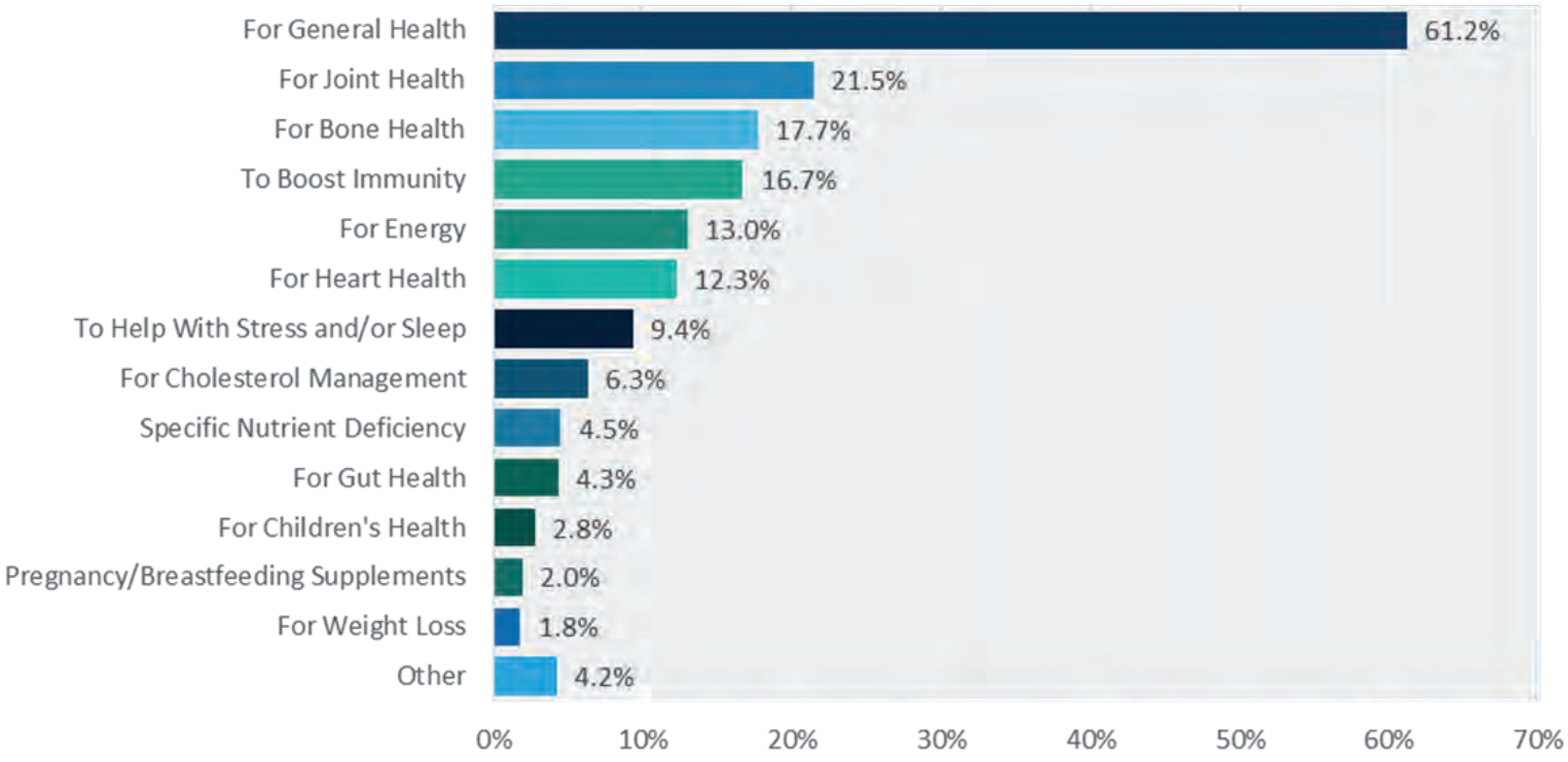


Figure 2.22: Reasons to take supplements – aggregate | N:2010

Reasons for VMS usage by product category

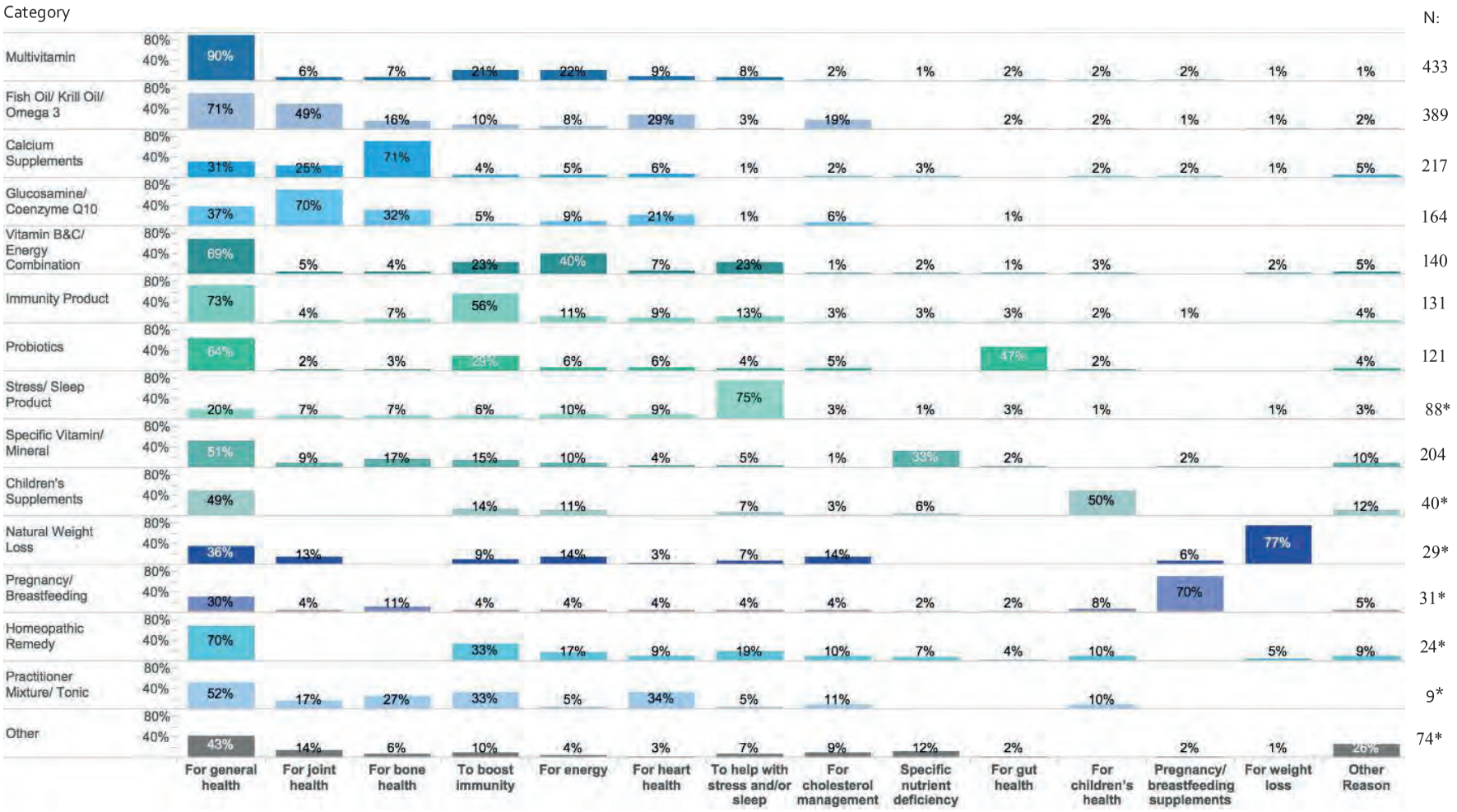


Figure 2.23: Reasons to take supplements – by product

* Please note however that in cases where the sample size is less than 100, it is difficult to make meaningful extrapolations to the general public.

2.4 VMS usage based on health risk

Do you take the various VMS products you indicated because you are at higher risk of those particular health concerns compared to people of your age and gender?

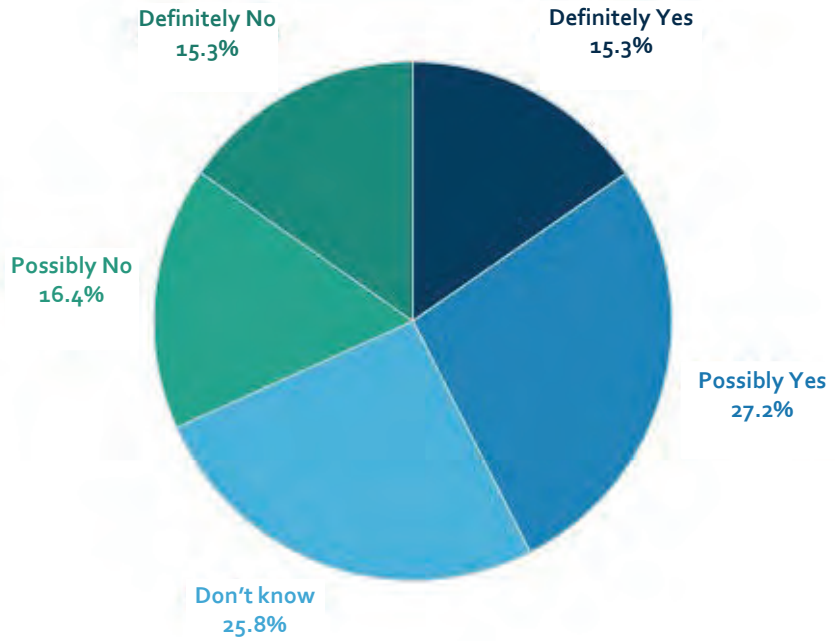


Figure 2.24: Usage link to perceived higher risk/vulnerability- aggregate | N:802

In general, respondents reported that they were taking VMS products because they were at higher health risks than others of the same age and gender. This seems consistent with the dominant reason of general health as a motivation for taking VMS products.

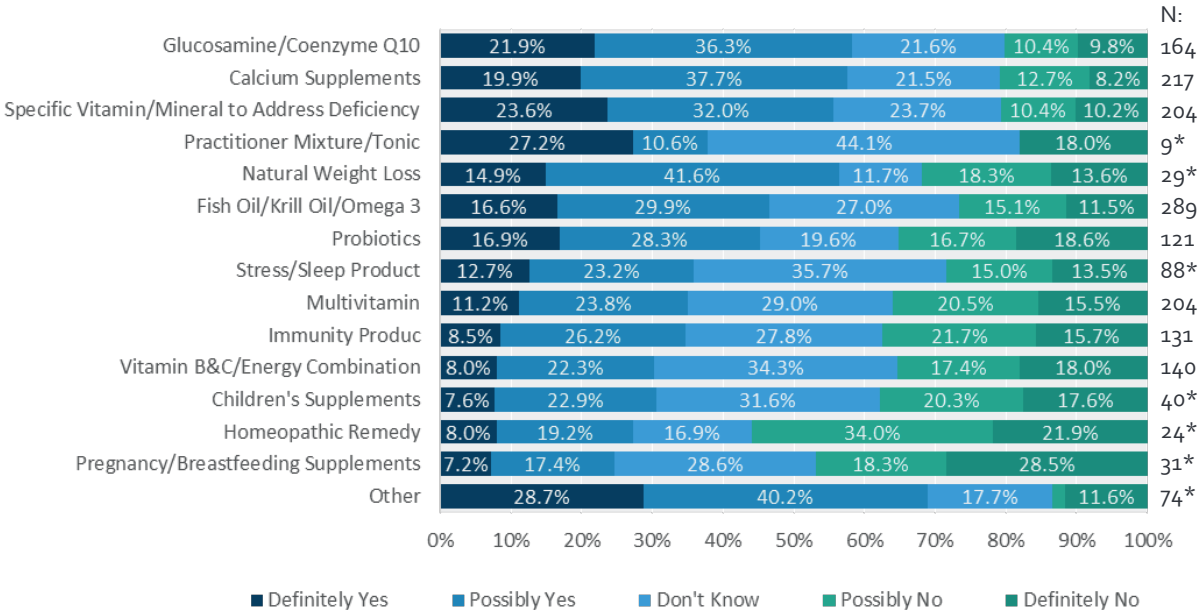


Figure 2.25: Usage link to perceived higher risk/vulnerability - by product | N:802

* Please note however that in cases where the sample size is less than 100, it is difficult to make meaningful extrapolations to the general public.

Glucosamine/coenzyme, calcium supplements and specific vitamins are the main products people take due to being at higher risk of the health concerns. Children's supplements, homeopathic remedy and pregnancy/breastfeeding/ folate are among the products people take for reasons other than specific

health risks. The chart above provides a summary of the extent respondents reported taking each VMS product due to perceived higher risk or vulnerability.

2.5 Place of purchase of VMS products

Where do you buy your health and nutritional supplements?

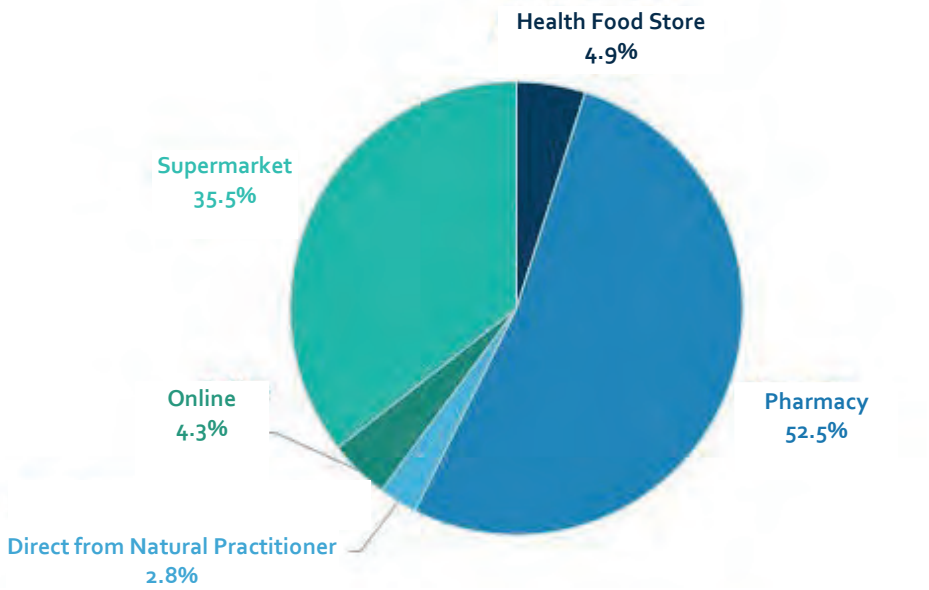


Figure 2.26: Retail channel split for VMS | N:802

Pharmacy and supermarket are the two main preferred channels of VMS purchase at 52% and 35% respectively. In contrast, VMS purchases from a practitioner of natural medicine accounts for just 2.8% of purchases.

2.6 Further information about VMS usage

In addition to the analysis in this section, further demographic splits of VMS usage for individual VMS categories are provided in Appendix A.

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SECTION 3:

Prescription to OTC Switch – Consumer Insights

3.1 Number of prescription medicines used

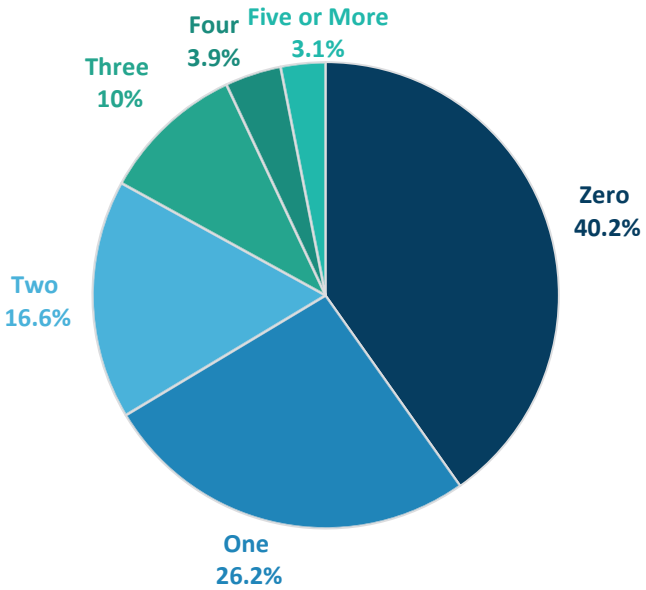

Figure 3.1: Number of prescription medicines used | N:1146

52.8% of respondents reported taking one to three prescription medicine types, while 40% take none at all.

3.2 Penetration of prescription categories

Do you currently take or have you recently taken (in the last 12 months) any of the following products by a doctor's prescription?

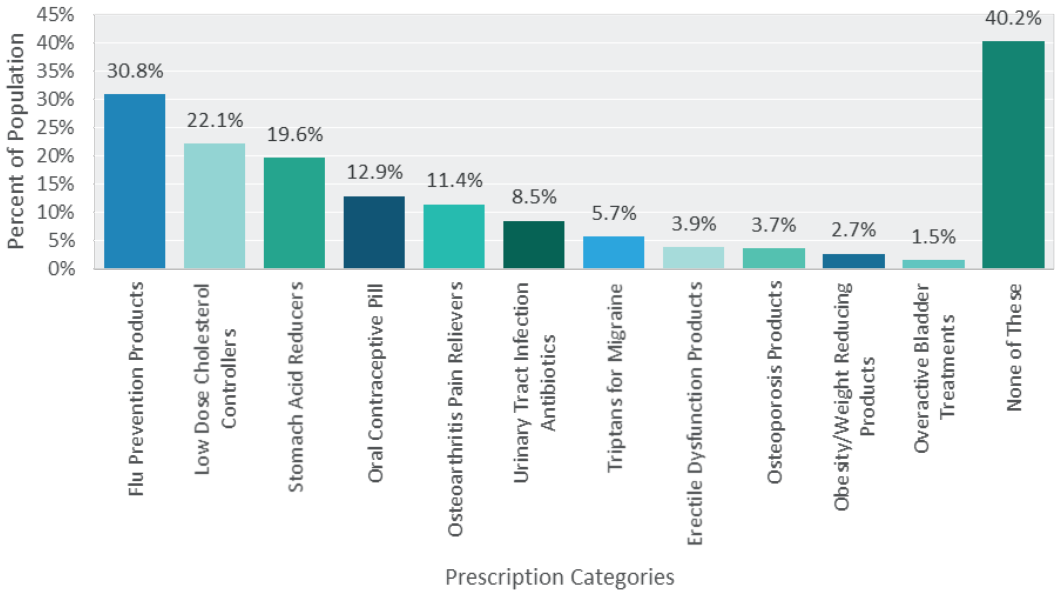

Figure 3.2: Penetration of key prescription-only medicine | N:1146

The penetration of possible switch candidate categories varies by category, with flu prevention, cholesterol controllers and stomach acid reducers at the higher end.

3.3 Pharmacist-only access preference by type of prescription medicine

If these medicines were available without a prescription, would you consider obtaining this medicine direct from your pharmacist instead of going to the doctor for a prescription?

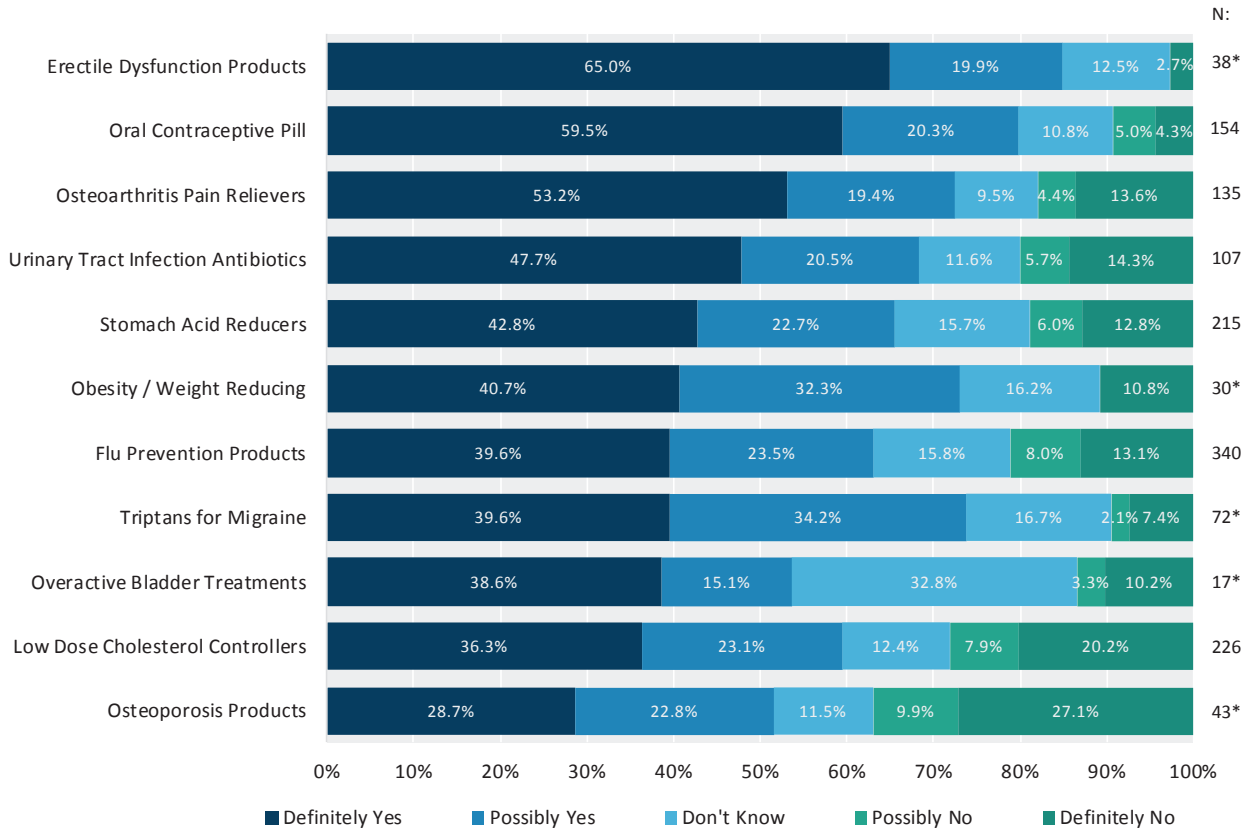

Figure 3.3: Access preference for key prescription-only medicine

Erectile dysfunction products and the oral contraceptive pill are two main products that people would consider buying directly from a pharmacist rather than going to a doctor for a prescription. In contrast, people are least likely to buy osteoporosis products and low dose cholesterol controllers/lipid lowering products from a pharmacist instead of going to a doctor for a prescription. *Please note however, that when the sample size is less than 100, it is difficult to make meaningful extrapolations to the general public.

3.4 Visits saved by prescription medicine if switched

If you could get these products without a prescription through your pharmacist, how many visits to the doctor would you save each year?

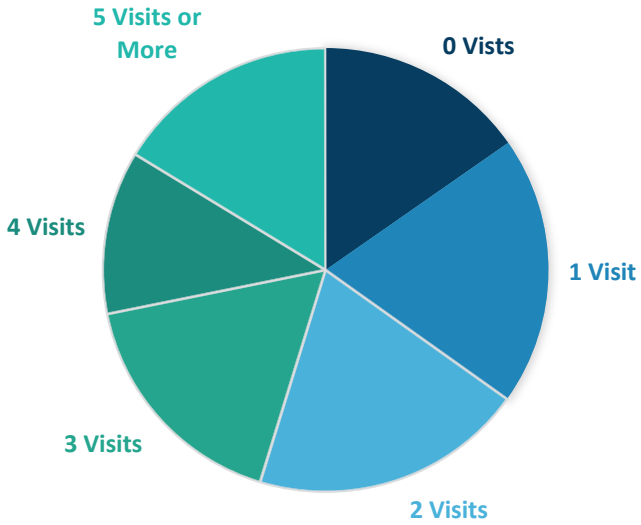

Figure 3.4: Doctor visits saved if available OTC | N:688

Getting one of these medicines without a prescription from a pharmacy saves at least one visit to the doctor per year for 85% of respondents.

3.5 Conclusion

This study provides important insights into the attitudes and behaviour of Australian consumers regarding OTC and complementary medicines. It reveals a high uptake of OTC medicines in Australia, indicating that consumers are comfortable treating a variety of illnesses with OTC medicines. It also shows the majority of Australians use complementary medicines and that they take supplements mainly for general health.

This study provides an important fact base in consumer healthcare to inform decision making and policy formulation in relation to OTC and complementary medicines.

APPENDIX A

A.1 Frequency of usage x Age x VMS product

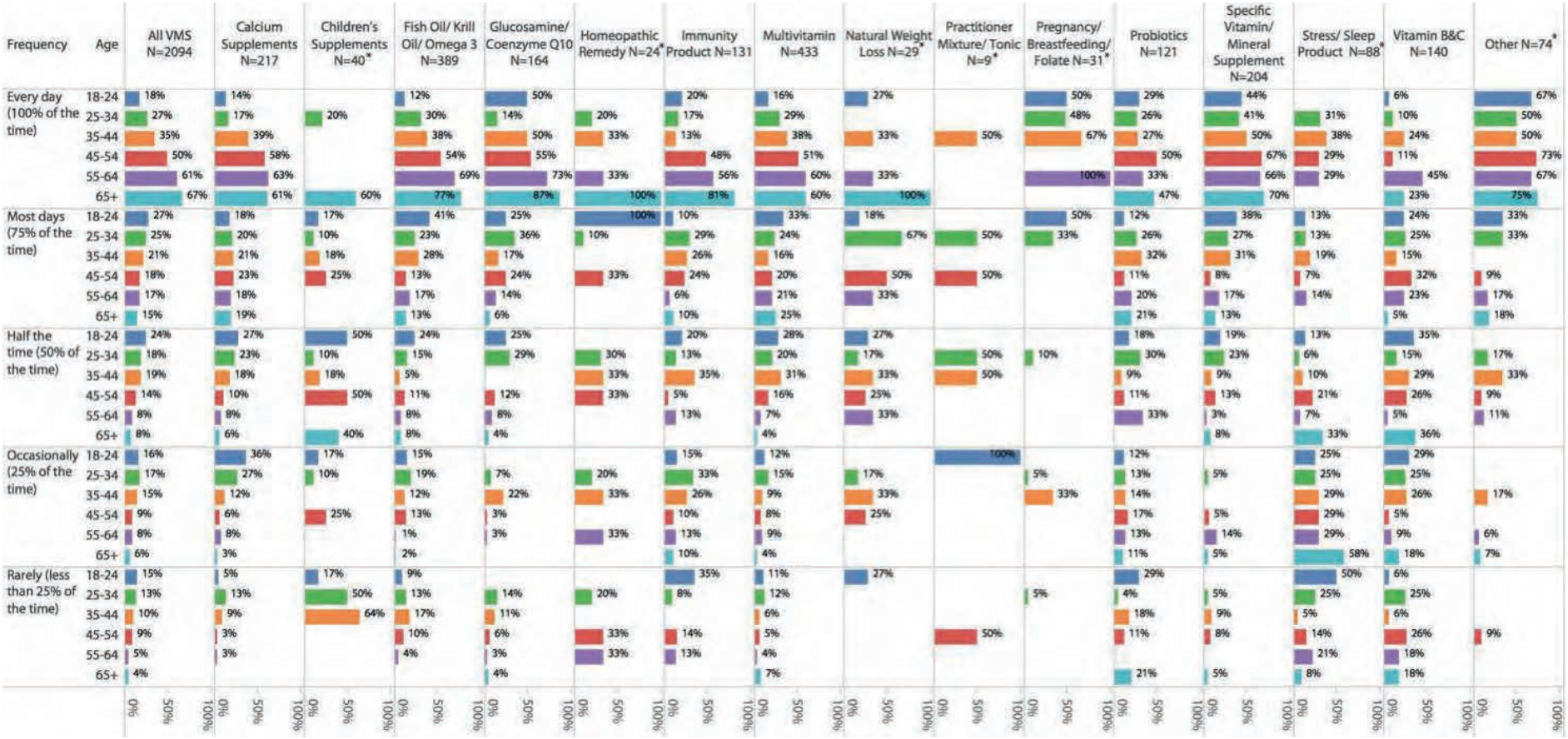

Figure A.1: Frequency of usage x Age x VMS product

For each VMS category, the age group, represented by different colours, is broken down by frequency of usage, and grouped by frequency, i.e. all the blue bars in a column, representing ages 18-24, will add up to 100%. * Please note that when sample size is less than 100 it is difficult to make extrapolations to the general public.

A.2 Age x Frequency of usage x VMS product

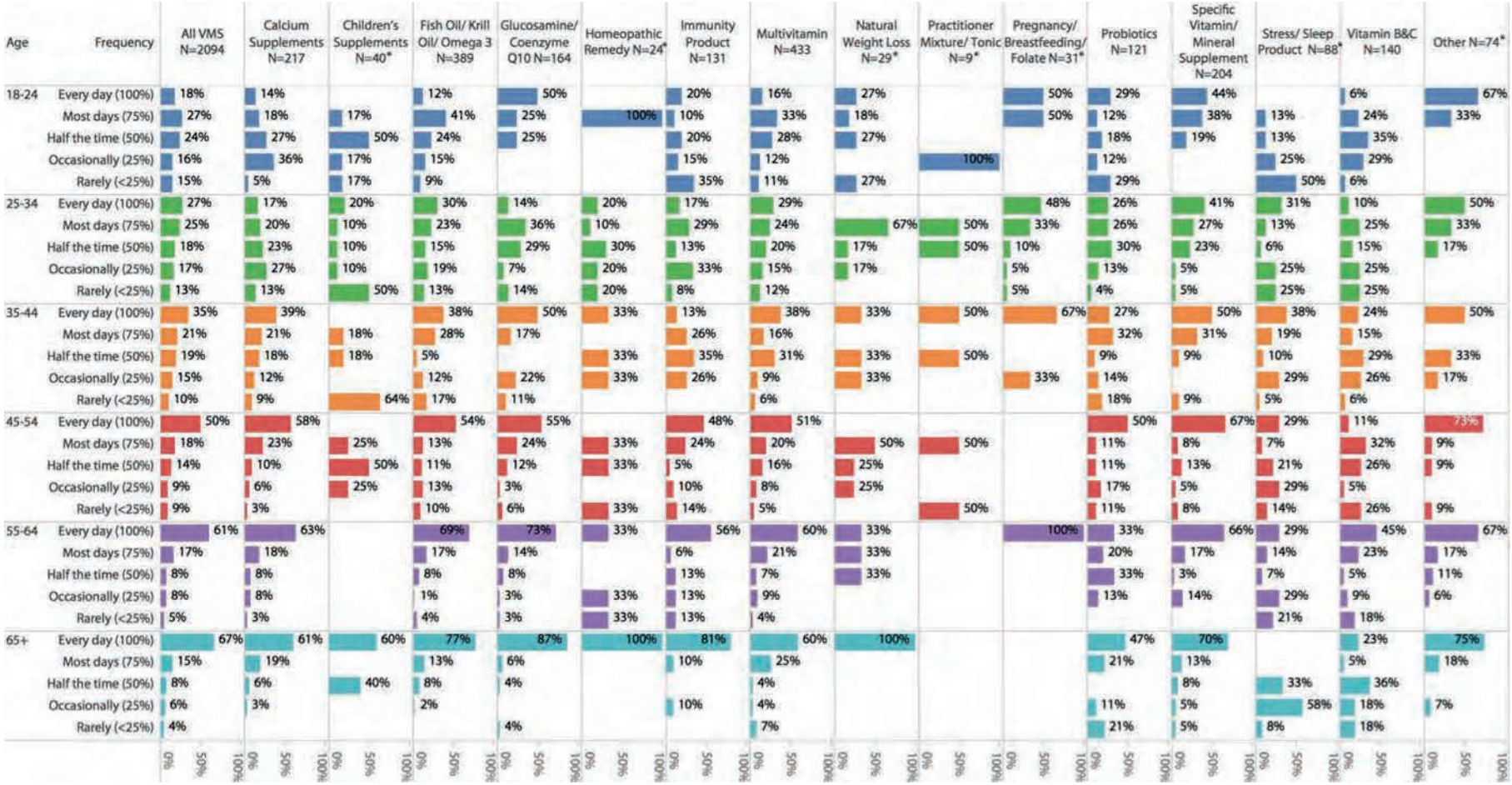

Figure A.2: Age x Frequency of usage x VMS product

This is the same set of data as in Figure A.1, however it is grouped by age to provide another useful perspective. Clear trends are visible within age groups, for example calcium supplements tend to be used more as people get older, signalled by the increasing amount of every day users for this product in this age category.
* Please note that when sample size is less than 100 it is difficult to make extrapolations to the general public.

A.3 Frequency of usage x Gender x VMS product

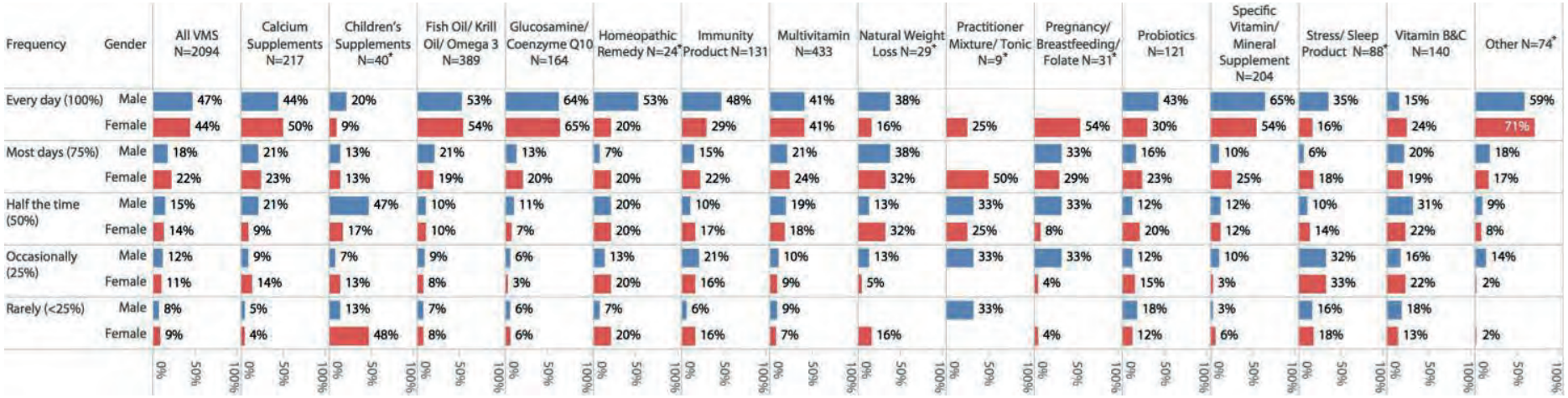

Figure A.3: Frequency of usage x Gender x VMS product

Each cell in the figure above contains two bars, blue for male and red for female, and represents the percentage of male and female who use the product in that column, at the frequency of its respective row.

This chart shows a comparison of frequency of VMS usage between male and female. A higher percentage of males use probiotics and specific VMS every day, whereas females tend to use calcium supplements and vitamins B and C on a daily basis more than males do.

* Please note that when sample size is less than 100 it is difficult to make extrapolations to the general public.

A.4 Gender x Frequency of usage x VMS product

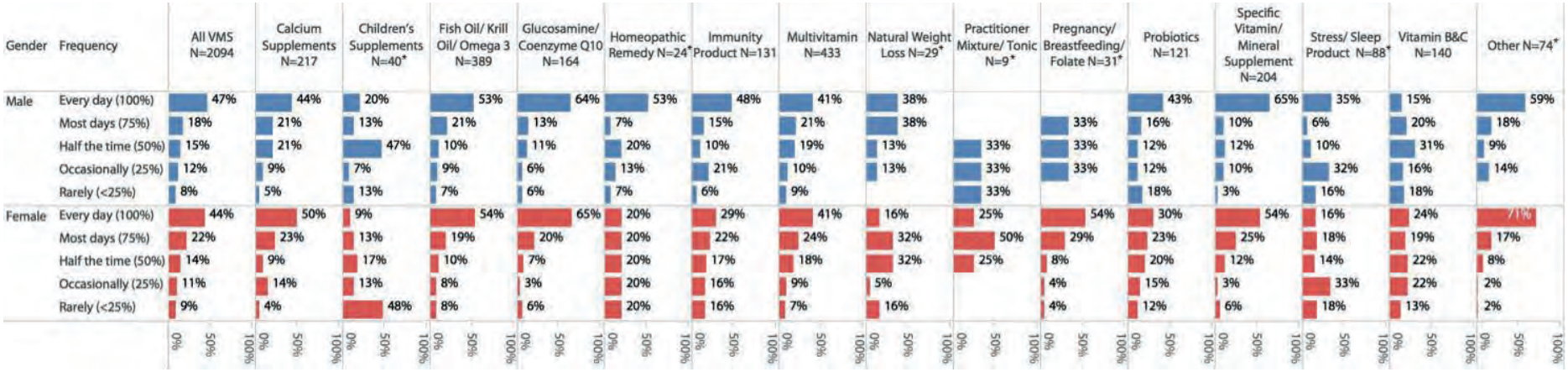

Figure A.4: Gender x Frequency of usage x VMS product

This chart uses the same data as Figure A.3, however groups the data according to gender rather than frequency. This chart makes clear the trend in frequency with each gender and shows that overall, the majority of both males and females take a VMS product most days, if not every day.

* Please note that when sample size is less than 100 it is difficult to make extrapolations to the general public.

A.5 Frequency of usage x Level of education x VMS product

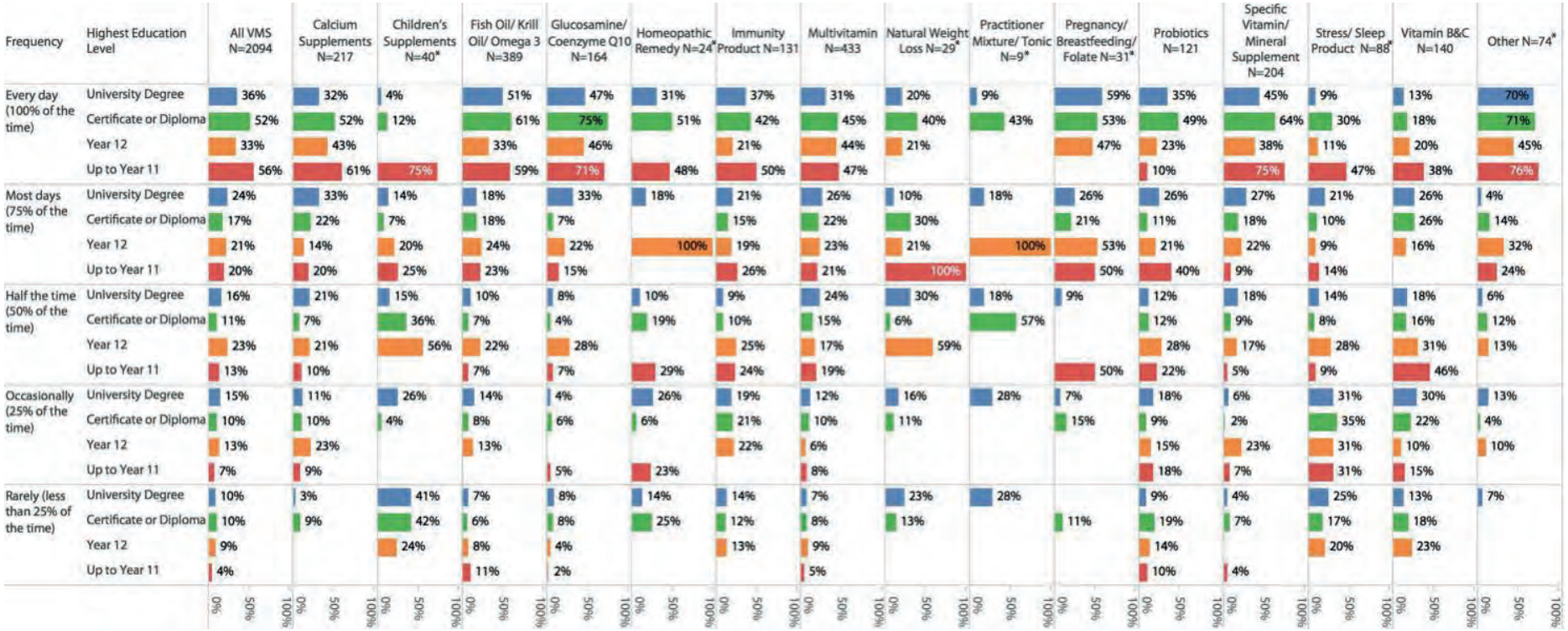

Figure A.5: Frequency of usage x Level of education x VMS product

This chart represents the relationship between VMS usage and the respondent's highest level of education, grouped by frequency of usage. Colour represents level of education. Although these tables show no one-way effect of education, more complex ANOVA models by the authors do show a positive effect of education on VMS usage.

* Please note that when sample size is less than 100 it is difficult to make extrapolations to the general public.

A.6 Level of education x frequency of usage x VMS product

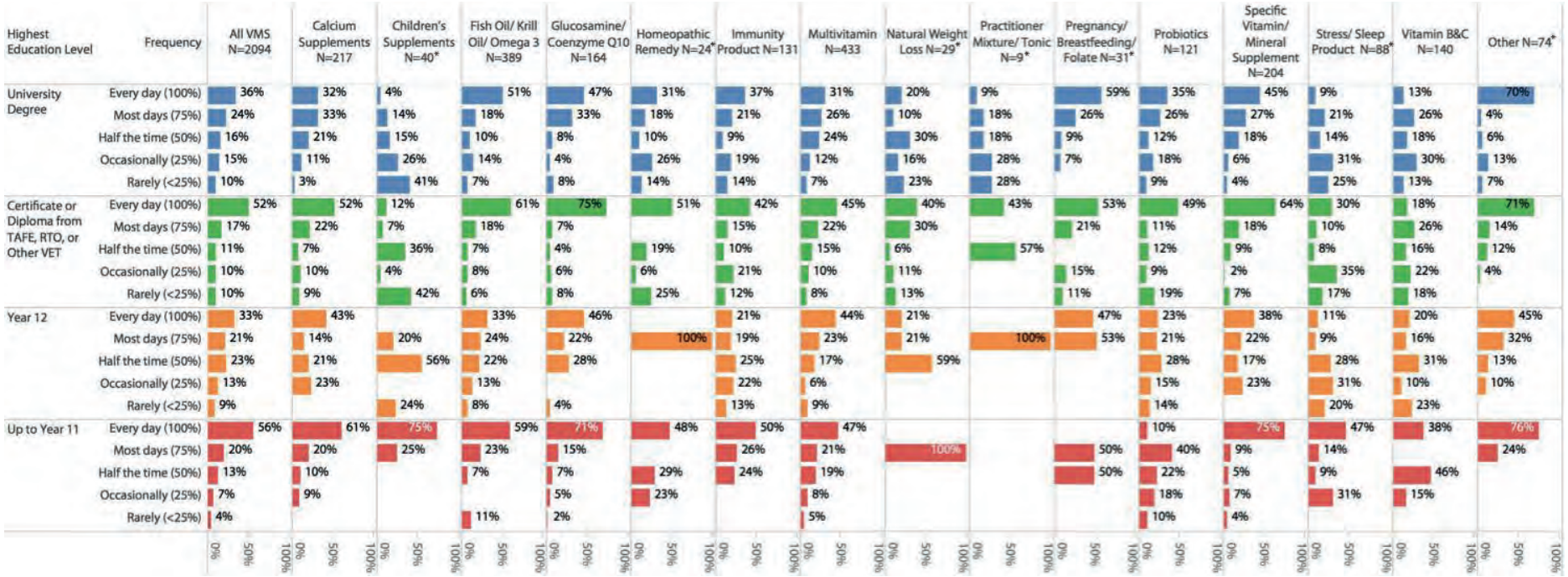

Figure A.6: Level of education x frequency of usage x VMS product

The data used in this chart is the same as Figure A.5, however represented so that frequency is grouped by education level. In this view of the data, a clear pattern can be seen across all education groups tending towards daily usage of most VMS products.

* Please note that when sample size is less than 100 it is difficult to make extrapolations to the general public.

STUDY AUTHOR

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