Quality of life, care dependency and Paracetamol In advanced Dementia: is paracetamol the panacea to improve quality of life?
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Chapter 1

General Introduction
Dementia

Worldwide, more than 55 million persons have dementia, the number increasing with nearly 10 million new cases each year.\(^1\) In the Netherlands, 250,000-290,000 persons have dementia, 32-38% of whom live in a long-term care facility (LTCF).\(^2,3\) Dementia is a neurodegenerative disease that mainly affects older adults and is often diagnosed when there are cognitive or behavioural (neuropsychiatric) symptoms.\(^1,4\) These symptoms must interfere with daily activities or work, clearly represent a decline from previous levels of functioning, and they are not explained by delirium or depression.\(^4\) Furthermore, the cognitive impairment has to be diagnosed based on history-taking from the patient and a knowledgeable informant, and an objective cognitive assessment. Finally, the cognitive impairment involves ≥ 2 of the following cognitive domains: I) impaired ability to acquire and remember new information, II) impaired reasoning and handling of complex tasks, poor judgment, III) impaired visuospatial abilities, IV) impaired language functions, and V) changes in personality and behaviour.\(^4\) Recently, the term ‘dementia’ has been replaced with ‘minor and major cognitive disorder’ in the Diagnostic and Statistic Manual of Mental Disorders (DSM5),\(^5\) but because Dutch guidelines still follow the above-mentioned criteria from the National Institute on Aging and the Alzheimer’s Association\(^6\), the term ‘dementia’ will be used throughout this thesis.

Quality of life

As dementia is a progressive neurological disease for which there is still no cure, the primary goal of caring for persons with dementia is optimizing their quality of life (QoL).\(^7\) The World Health Organization (WHO) defines QoL as ‘an individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.’\(^8\)

Persons with dementia may not always be able to set their own goals and expectations. In this light, the WHO has defined goals for caregivers to improve dementia care, which include ‘optimizing well-being’ and ‘understanding and managing behaviour changes’.\(^1\)

According to Lawton, important domains of QoL in persons with dementia include competent cognitive functioning, the ability to perform activities of daily living (ADL), to engage in meaningful and social activities, and having balanced positive and negative emotions.\(^9\) Ultimately, it is up to the persons with dementia themselves, which of these components are most important for their QoL, which characterizes the subjectivity of this topic.\(^7\) When persons with dementia are no longer able to assess their own QoL, family, friends and professional caregivers need to be their voice, as they are most familiar with their values, goals and needs. There is a wide diversity of proxy-rated QoL assessment tools, reflecting the complexity of measuring QoL.\(^10,11\) The QUALIDEM\(^12,13\) is one of these tools and was identified and recommended previously as having
the most measurement properties reported, i.e. adequate evidence of construct and content validity, and satisfactory test-retest and inter-observer reliability.\textsuperscript{11, 13, 14}

There is evidence that the QoL of persons with dementia does not always decline as the disease progresses.\textsuperscript{15, 16} However, there are symptoms and signs accompanying the progressing disease that have an impact on QoL, i.e., functional decline,\textsuperscript{17, 18} and neuropsychiatric symptoms such as depression, aggression and psychosis.\textsuperscript{17-22} Also, the way in which QoL is measured (self-rating in persons with mild to moderate dementia and proxy-rating in persons with advanced dementia) may influence the outcome.\textsuperscript{19, 21, 23} People surrounding persons with dementia face the challenge of optimizing these persons’ QoL, and every factor identified to facilitate this, such as finding undiagnosed pain and treating it, is an added benefit.

**Pain**

Pain is common in persons with dementia living in LTCF: 30 to 80% regularly experiences acute or chronic pain.\textsuperscript{24-27} Multiple causes can be found for this pain, often related to old age, and include musculoskeletal conditions, pressure ulcers and genitourinary infections.\textsuperscript{25, 28, 29} The challenge is to identify those persons that are in pain and suffer from it. Ideal and the golden standard is that the persons self-report their pain. However, pain perception in persons with advanced dementia may be different and they are often no longer able to express pain adequately in terms of location, intensity and origin. Also, they are not always able to report the effect of pain treatment or potential adverse events.\textsuperscript{25, 30} Consequently, pain in persons with advanced dementia is mainly observed and assessed by proxies (nursing staff, informal caregivers), but good assessment of pain is still not commonly implemented in practice in LTCF.\textsuperscript{31} Although these assessments by proxies remain partly subjective, may vary between observers,\textsuperscript{32} and differ from outcomes of self-reported pain assessments,\textsuperscript{33} knowledge on the existence and intensity of pain is very important. Underdiagnosed and therefore untreated pain may have a negative impact on neuropsychiatric symptoms, i.e., aggression,\textsuperscript{34, 35} agitation,\textsuperscript{36} and depression,\textsuperscript{37, 38} social interaction,\textsuperscript{39} ADL,\textsuperscript{40, 41} appetite\textsuperscript{42} and sleep.\textsuperscript{43, 44} It may therefore have a major negative impact on the QoL of persons with advanced dementia (fig. 1).\textsuperscript{26, 27, 45}
Pain treatment

Non-pharmacological interventions
Pain management in persons with dementia can be challenging, since these persons often have comorbidities and a vulnerable brain, which increase the risk of adverse drug reactions. In this perspective, non-pharmacological interventions should be explored first when managing pain. Several non-pharmacological interventions have been studied and been found effective on pain in persons with dementia, i.e. massage, exercise, music therapy and robotic care. These may work through providing distraction from pain and they also have been found effective on neuropsychiatric symptoms like depression and agitation. Pain and neuropsychiatric symptoms often co-exist and previous research has found evidence pointing towards behavioural interventions with a positive effect on pain and vice versa. However, more research (solid randomized controlled trials) is needed to find out more about specific interventions such as singing, robotic care, aromatherapy and play activities, and to find the best frequency of offering an intervention for improving pain and neuropsychiatric symptoms in persons with dementia.

Pain treatment
To provide a good strategy to adequately treat pain in cancer patients, the WHO proposed an analgesic ladder in 1986. This ladder was later introduced in other patient groups outside cancer care and was composed of three steps: 1) mild pain: non-opioid analgesics such as paracetamol (also named acetaminophen) and nonsteroidal anti-inflammatory drugs (NSAIDs), 2) moderate pain: weak opioids with or without non-opioid analgesics, and 3) severe and persistent pain: strong opioids such as morphine, oxycodone, fentanyl and buprenorphine, with or without non-opioid analgesics (fig. 2). Although this ladder was recently extended and adjusted by other authors, focusing more on QoL and on a bidirectional approach, part of step one (NSAIDs) and all of step 2 are usually skipped in older persons because of gastro-intestinal, cardiac, psychiatric and/or kidney side-effects.
Paracetamol in older persons

Paracetamol appears to be relatively safe and effective in treating mild to moderate pain in older persons, although the available evidence on safety and efficacy of paracetamol in an older population, especially long-term treatment, is limited. While paracetamol is recommended as the first step in pain treatment and is most frequently used to treat mild to moderate pain among older persons with dementia, the working mechanism of paracetamol still remains partly unclear. It is well known for its analgesic and antipyretic effects, but some people say they feel better when they take paracetamol. Is this because they had a fever, which is reduced by paracetamol and consequently they feel better? Or does paracetamol have other working mechanisms on well-being we do not yet know about? This is an interesting question, which to date remains unanswered. So far, paracetamol is step 1 of pain treatment, also in older persons, as the side-effects remain limited in low dosage (≤ 4 g per day for acute use and ≤ 3 g per day for chronic use). The recommended maximum daily dosage for paracetamol in older adults for use longer than 1 week is 2.5 g per day, except when a person has health problems such as liver insufficiency, a body weight ≤ 50 kg and/or use of more than 4 IU of alcohol per day.

Effects of pain treatment

Previous research in persons with dementia has shown positive effects of paracetamol and opioids on sleep, at least in the first weeks of use, social interaction, agitation and psychosis, and depression, and as a result also improvement of staff distress in LTCF. Although strong opioids might be effective for persons with dementia and are increasingly prescribed, there are safety concerns that clinicians need to take into account. Pain medication needs to be prescribed with caution, with special attention to monitoring efficacy and side-effects.

Care dependency and daily functioning

When a person is no longer able to fulfil their own needs, care dependency commences. With the progression of dementia, cognitive functions, such as memory, executive functions and planning/organizing, will deteriorate and help is needed from others. Initially from relatives and family, and at a later stage from professional caregivers. These declining cognitive functions often cause worsening of daily functioning. First affected are instrumental Activities of Daily Living (iADL; telephoning, shopping, preparing meals, taking care of household, travelling, taking medications and taking care of own finances), followed by the basic ADL skills (dressing, bathing, toileting, transferring, incontinence and eating). The level of dependence in daily functioning has a direct negative relationship with the QoL, morbidity and mortality and pain of a person with dementia. To maintain or improve their QoL, and to ameliorate distress of caregivers who take care of these persons, there is a need for points of reference to improve care dependency and daily functioning in persons with dementia.
Aims and outline of this thesis

Maintaining or improving the QoL of persons with advanced dementia is a huge challenge, mainly because it involves many factors. One of them is undiagnosed and therefore un(der) treated pain, which can be treated with pain medication. The populations in all studies used for this thesis consisted of persons with advanced dementia living in LTCF. The primary aim of this thesis is to investigate what the effect of paracetamol is on QoL and care dependency of persons with advanced dementia and low QoL living in LTCF. Other aims that are addressed in this thesis are to explore which persons with advanced dementia use different types of pain medications, how their pain medication use is associated with their QoL, and to investigate the effect of paracetamol on other outcomes such as neuropsychiatric symptoms, discomfort, pain and daily functioning.

Part 1 – Quality of life and pain medication in dementia

In Chapter 2 of this thesis I) the characteristics of persons with advanced dementia living in LTCF with and without pain medication are compared, II) the QoL of these persons with and without pain, stratified by pain medication use (paracetamol, opioids, both paracetamol and opioids, or no pain medication), are compared, and III) the associations between the use of paracetamol and QoL of persons with advanced dementia living in LTCF are explored. The research questions of this chapter are:

1. What is the difference in characteristics between persons with advanced dementia living in LTCF with and without pain medication?
2. What is the association between the QoL, pain and use of pain medication (paracetamol, opioids, both paracetamol and opioids, no pain medication) of persons with advanced dementia living in LTCF?

Chapter 3 comprises the study protocol, aims and outline of the Quality of life and Paracetamol In advanced Dementia (Q-PID) study: to evaluate the effect of scheduled pain treatment with paracetamol on QoL, neuropsychiatric symptoms, pain, daily functioning and care dependency.

Chapter 4 shows the results of the main outcome measures of the Q-PID study. The research questions addressed in this chapter are:

1. What is the effect of regularly scheduled administration of paracetamol on QoL and discomfort of persons with advanced dementia living in LTCF?
2. What is the effect of regularly scheduled administration of paracetamol on pain and neuropsychiatric symptoms of persons with advanced dementia living in LTCF?
Part 2 – Care dependency, daily functioning, pain medication and QoL

Chapter 5 comprises results of the Q-PID study and investigates the effects of scheduled administration of paracetamol on care dependency and daily functioning of persons with advanced dementia living in LTCF. The following research question is addressed in this chapter:

1. What is the effect of regularly scheduled administration of paracetamol on care dependency and daily functioning in persons with advanced dementia living in LTCF?

Chapter 6 investigates care dependency and ADL functioning in persons with advanced dementia living in LTCF, and explores which factors are associated with care dependency and daily functioning. The research questions addressed in this chapter are:

1. How care dependent are persons with advanced dementia living in LTCF?
2. Which factors are associated with care dependency and daily functioning of persons with advanced dementia living in LTCF?

The final chapter, Chapter 7, presents the general discussion on the main results of the studies, considers the clinical implications of the findings, and provides recommendations for future research to improve the care for, and QoL of, persons with advanced dementia.
REFERENCES


55. NHG. Wat is de maximale dagdoser ing van paracetamol voor langdurig gebruik bij benigne aandoeningen? 2004 URL: https://www.nhg.org/sites/default/files/content/nhg_org/uploads/standpunt_wat_is_de_maximale_dagdosering_van_paracetamol_die_voor_chronisch_gebruik_bij_benigne_aandoeningen_zoals_artrose_aanbevolen_kan_worden_.pdf.


57. Habiger TF, Flo E, Achterberg WP, et al. The Interactive Relationship between Pain,
Psychosis, and Agitation in People with Dementia: Results from a Cluster-Randomised Clinical Trial. Behavioural neurology 2016;2016:7036415.


