

Reviving Bedlinen: User Expectations, Use-Life, and Repair Practices in Australia

Emma Peters^(a)

a) University of New South Wales, Sydney, Australia

Keywords: Bedlinen; Home Textiles; Product Expectations; Repair; Circularity.

Abstract: This paper considers the relationship between user expectations of domestic bedlinen, product use-life and repair engagement within an Australian context. Bedlinen, in this instance, includes flat and fitted sheets, pillowcases, and quilt covers - also known as duvet covers, or in Australia, doona covers. There is limited data on this specific textile product within sustainability and circularity research. This paper discusses findings from the survey, *Bedlinen and Sustainability* (2023), which includes questions focused upon attitudes and behaviour regarding bedlinen purchase, use, care, repair, reuse and disposal. Key findings are identified and are discussed as factors that directly impact the use-life of bedlinen. These include laundering choices, emotional durability, change of mattress sizes, expectations of comfort, maintaining original condition, and repair challenges.

Introduction

Bedlinen, like all material culture, exists in an interconnected context of production, consumption and entangled systems of historical, social and cultural value (Appadurai, 1988; Rinkinen et al., 2015). Domestic bedlinen in Australia is largely influenced by Western traditions of dressing the bed – expanses of flat woven cloth that protects a mattress, pillows and doona. For the user, bedlinen provides protection, thermal regulation, comfort and hygiene (Ahirwar et al., 2020; Chanda et al., 2020; Dubale et al., 2021; Sundaresan et al., 2016). Like garments and other household textiles, bedlinen is more than a functional item for some users – it is an item of self-expression, identity-creation and home-making (Barnard, 2014; Gram - Hanssen & Bech - Danielsen, 2004).

Within sustainable textile literature, bedlinen is most often included within the broader category of 'home' or 'household textiles' which also includes products such as bathroom towels, napery, curtaining and upholstery. To date, there is limited research specific to domestic bedlinen and product longevity. Since 2019, there has been one significant piece of research in this field. *'The Citizen Insights: Estimating the longevity of home textiles'* report published by UK non-governmental organisation WRAP (Rao et al., 2023), was the first major report to investigate home textiles in a Western context, and identifies opportunities

to encourage consumer strategies such as care, repair and reuse, to extend product longevity for these types of textiles. This paper takes the opportunity to build upon and deepen these understandings to offer more specific insights of bedlinen use in an Australian context.

Bedlinen Longevity and Consumer Impacts

The longevity of products and materials are an increasing concern in a time of high consumption, mounting waste and escalating energy expenditure (Jensen et al., 2021). Supporting product longevity is the responsibility of multiple stakeholders – federal, state and local governments, industry bodies, businesses, and consumers. Understanding barriers and creating strategies to extend product lifetime are an important approach in shifting towards a circular and more sustainable economy (Bakker et al., 2021; Cooper, 2020).

User expectations, comfort and longevity

It is well established that consumers are a contributing factor to product longevity and sustainability (Gnanapragasam et al., 2017). *'The Citizen Insights: Estimating the longevity of home textiles'* report (Rao et al., 2023) states that the primary reasons household textiles become inactive is that they no 'feel as nice', pointing to expectations of comfort. Unwanted physical issues, such as shrinkage, damage,

fading, or staining that occur over time is reported as the second reason for home textiles to fall out of use.

Comfort is a subjective and dynamic experience (Kamalha et al., 2013) influenced by variables such as age, gender, social and cultural influences, deriving from both physiological and psychological human responses to the sensation of touch (Kergoat et al., 2012).

It could be argued that perception of wear and tear are also subjective and dependent on the user's opinion of material aging, (Chapman, 2015) and confidence in being able to return the product to its original state. British sociologist, Elizabeth Shove in her book, *Comfort, cleanliness and convenience: the social organization of normality* (2003) points to the ever-growing expectations of comfort of goods and services and the impact this has on the environment.

Use-life, care and longevity

Product use-life is dependent on user behaviour. The bed, along with associated bedlinen is a site of intimate events – sleeping, eating, bedwetting, menstruation, sex, childbirth, illness, death - all of which have the potential to leave stains and elicit disgust if the origins are unknown (Ayling-Smith, 2018). The trace of such personal experiences is often perceived to be undesirable and unhygienic. Users apply laundering practices to remove these traces of contact, which simultaneously result in the deterioration of the fabric (McLaren et al., 2015).

There are numerous opportunities for consumers to improve their care and laundering practices for product longevity and sustainability (Godin et al., 2020; Laitala et al., 2011; Shove, 2004). Yet, there are deeply embedded cultural and social belief systems that need to be understood to move towards a more effective care of textiles. In the book *'Purity and danger: an analysis of concepts of pollution and taboo'* (2003), Douglas establishes a connection between the power of social conventions and perceptions of dirt that continue to impact today's increased need to over-launder. Shove (2004) adds that extending the lifetime of products involves rethinking societal norms and expectations around cleanliness and convenience.

Repair, care and longevity

Repair is a circular strategy aimed at maintaining materials at their highest value and delaying waste creation. The term "repair" originates from two Latin words, meaning "to return to" or "to fix," both implying a return to an original state (Harper, 2023; Merriam-Webster, 2017). This dual meaning underscores the traditional goal of repair and aligns with user expectations for possessions to maintain their original condition. In recent times, repair in the west has undergone a shift to include 'visible mending' where creative noticeable repair adds value to an item (Maycroft, 2024).

Repair is an act of care (Tronto, 2013), where skill and time are given to an item that requires mending, with a connection forged between user and object. Professor of philosophy, Elizabeth Spelman, provides an important understanding of repair as a fundamental aspect of human life and 'the creative destruction of brokenness' (2002). Spelman argues that repair of physical objects, emotional bonds or societal issues, is not only concerned with restoring functionality, but also acknowledges and responds to the fractures in our world as part of the human-experience. Chapman (2015) adds that the act of repair creates a strong emotional connection to objects that are consequently kept for longer periods of time. These perspectives recognise the transformational agency of repair as an act of care that also promotes the functional and emotional durability of products such as bedlinen.

In the past, small tears in bedlinen were mended with a darning technique, and for more extensive tears, a process known as 'sides to the middle' or 'turning' the sheets was applied (Lowry, 2020). This technique involves cutting the sheet in half and flipping the less worn sides of a sheet to the centre and sewn down the middle. This repair technique improves longevity and leaves a raised seam down the middle of a sheet. This method of repair is problematized by user expectations of comfort which will be continued as a discussion later in the paper.

Methods

The *Bedlinen and Sustainability* survey was conducted in Australia across two months in

2023. This quantitative research forms part of a doctoral study investigating the diversion of post-consumer bedlinen waste from landfill towards opportunities for product longevity and transformative renewal. Fourteen questions were asked of participants through an online survey to explore attitudes and behavior regarding bedlinen purchase, use, repair, reuse and disposal within a domestic context.

Table 1
Questions asked in the Bedlinen and Sustainability survey, 2023.

Bedlinen Ownership	How many of each of these bedlinen items are in regular use on your own bed, i.e., used at least once a month?
	How many of these items do you have stored and in irregular use, i.e., used less than every six months? (If you use all your linen regularly, check 'none' for each.)
Bedlinen Purchasing	When buying bed sheets and/or doona covers, which of the following factors is the most important to you? Select as many as you like.
	Thinking about your most recently acquired bed sheets and/or doona cover, how did you acquire it?
Bedlinen Expectations	How long do you expect to use the following items for?
	If you have used the following items for more than ten years, what is the main reason?
Bedlinen Care - Laundering	How often do you wash your bedlinen?
	Which of the following cleaning methods do you regularly use for bedlinen? Please select all that apply.
	At what temperature do you wash your bedlinen?
Bedlinen Repair	Has your bedlinen been repaired, by yourself or a professional service?
	If you answered 'no' to your bedlinen being repaired, what prevents you from repairing your bedlinen?
Bedlinen Disposal	What are the primary reasons you have disposed of the following items?
	When you no longer want the following item, how do you dispose of it?

The survey included multiple-select questions with the opportunity to add a free-response answer to provide more detail and offer rich qualitative data. Analysis techniques employed include descriptive statistics to summarise

quantitative data, and thematic and sentiment analysis to identify common themes and overall attitudes of qualitative free-response answers.

The small-scale survey was distributed through social media via personal and professional networks over a one-month period (22 September until 18 October 2023). This mode of distribution has potential recruitment biases given that there is high sustainability and repair literacy amongst this network. While the relatively small sample size of 273 responses is not representative of the broader Australian population, it does offer valuable insights into the expectations, attitudes, and behaviors related to bedlinen longevity, an area that remains relatively under-researched.

Selected Findings

Use-life: Laundering

All survey participants reported using a washing machine to launder, with five participants also occasionally handwashing, soaking or bleaching their bedlinen for stubborn stains. Just under half of the participants (48%) opt for a cold wash, 36% wash their linen between 20-30 degrees, and 16% select a higher temperature setting. A small percentage (6%) reported not paying attention to the temperature setting before washing their linen.

Exactly half of the participants washed their bedlinen every two weeks, with 31% laundering every week, 17% once a month and 3% every 2-3 months. Over half (53%) of the survey participants line dry their bedlinen, 28% use a combination of line drying and tumble drying and 22% only use the tumble dryer. Nine participants reported ironing all or a portion of their bedlinen (such as edges of sheets or just pillowcases).

Expected Lifespan of Bedlinen

Most survey participants expected to have their bedlinen for between 5-10 years with doona covers and flat sheets lasting another five years than fitted sheets or pillowcases. This reflects the high-wear use of sheets and pillowcases in comparison to doona covers.

Participant expectations of bedlinen upon acquirement

The survey revealed that participants prioritised fabric and fibre type, as well as the comfort and quality of the fabric, over factors such as price, style, and durability. 'Natural' fabrics, such as cotton and linen, were mentioned in the survey comments as priorities by five participants (Survey respondents #258, #260, #267, #269, #271). Thread count and weave type were remarked upon as a tool to determine high quality bedlinen (Survey respondents #258 and #272).

Table 2

When buying bed sheets and/or doona covers, which of the following factors are the most important to you? Select as many as you like.

Important factors	%
Type of fabric/fibre	93
Comfort eg. texture, weight	88
Quality of fabric	87
Price	85
Design / style	76
Durability	71
Ease of cleaning and maintenance	64
Keeping cool	62
Staying warm	58
Sustainable materials	58
Ethically made	55
Locally made	47
Brand	43
Ease of repair	40
Reviews and ratings	39
Recommendations	35
The item is on trend/fashionable	35
Potential re-sale value	34
Other	11

The findings indicate a concern for easy-care cleaning and maintenance. Body temperature regulation such as warmth or coolness were of importance, with the 'breathability' of fabric mentioned as an additional comfort factor (Survey respondent #255). Specific circular strategies, such as refraining from buying new bedlinen, secondhand purchasing, and reuse appeared as additional comments. This participant commented how they consider use of the bedlinen beyond the first cycle -

'Knowing if I like the fabric enough to cut it up once "finished" and then remade into something new. For example I've remade a duvet into a dress.'

Survey respondent #265, Female, 21-29.

Participant motivations for bedlinen replacement

Just under half of the survey participants reported never having thrown out their bedlinen (43%). Those that had disposed of their bedlinen listed reasons that can be categorised into several key factors (Table 3). The most common reason, cited by 62% of respondents, is a change in living circumstances. This could include moving to a new home, moving in with a partner or moving overseas, which compels bedlinen to be replaced. A related impact, mentioned by approximately 53% of participants, was a change in mattress size, requiring purchasing new bedlinen that fits the new mattress dimensions.

Table 3

What are the primary reasons you have disposed of sheets, pillowcases and doona covers?

Reasons for disposal	%
Change of living circumstances	62
Change of mattress size	53
Received new bedlinen as a gift	51
Elastic on the fitted sheet is compromised	50
Replaced for higher quality fabric	48
Pilling of fabric	44
Torn or ripped fabric	43
Uncomfortable	42
No longer suited my style	40
Wrinkled easily	40
Not warm or cool enough	38
Faded	34
Stained	32
Lost	10

The survey also highlighted wear and tear, as a primary reason for disposal, expanded upon by this participant -

'When we end up discarding of bed linen it's primarily because they have stains/disco colouration. My partner sweats a lot (I know it's gross) so basically turns any pillowcase and sheet yellow over time. White sheets can be bleached but have been struggling to clean anything with a print/non-white.' Survey respondent #90, female, 20-29.

Expectations of comfort also provoked survey participants to replace their bedlinen - 45% survey participants shared that bedlinen replacement occurred because they desired a higher quality fabric, 40% stated they were dissatisfied with scratchy or uncomfortable fabric texture, and 35% expected better thermal comfort in terms of warmth or coolness.

Additionally, aesthetic style was mentioned as a reason for disposal. About 40% of respondents mentioned that their bedlinen no longer suited their style, and 40% also cited that it wrinkled too easily.

Participant Perception and Engagement in Bedlinen Repair Strategies

When asked whether the survey participant's bedlinen had been repaired, by themselves or a professional service, over half responded that they had not repaired their bedlinen (60%). Out of those that had engaged in repair, a portion of respondents (37%), stated they had made repairs themselves, while only 2% had paid someone else to make a bedlinen repair, and another 2% had enlisted an unpaid repair by another person.

The types of repairs that survey participants reported making ranged from replacing missing buttons or ties on doona covers, repairing tears in fabric and replacing elastic on fitted sheets.

The primary reasons cited for not undertaking repair were a lack of repair skills at 44%, a lack of time at 28%, and repair being too expensive to outsource at 27%. Two participants commented that it was cheaper to buy new bedlinen than engage with repair services (#238 & #255). Others remarked they did not know that you could repair bedlinen (#51 & #59). A significant number of participants considered worn and torn sheets 'too far gone' as captured by this participant -

'By the time the fabric is so thin that someone puts a foot through it, it's not structurally sound enough to repair.'

Survey respondent #245, gender not specified, 50-59.

An additional comment spoke to the physical discomfort of repair work when sleeping -

'I don't like the texture of repaired sheets (eg the feeling of the stitches)'

Survey respondent #100, Female, 30-39.

Discussion

Participants are making sustainable laundering choices

The majority of survey participants selected more sustainable and life-extending approaches to washing their bedlinen – selecting cold wash not only saves energy, but also reduces erosion of fibres and microfibre release, and reduces colour loss and fading (Cotton et al., 2020), which are contributing factors to more frequent disposal of bedlinen.

The Australian climate allows for a greater uptake in line-drying, in comparison to colder climate locations such as the UK, as described in the paper *'Dirtying Linen: Re-evaluating the sustainability of domestic laundry'* (Yates & Evans, 2016). A significant number of participants use low-impact, low-energy, and low-cost methods of line-drying bedlinen. Despite the additional labor involved, this method preserves the integrity of the fabric for longer and harnesses the natural bleaching effect of the sun to fade stains. However, it also causes greater fading to dyed and printed fabric. Consumers must frequently apply different laundering methods to suit the specifications of the fabric, which requires textile laundering knowledge.

Bedlinen requires embedded emotional durability and timeless design

The survey found that a primary reason for bedlinen disposal was due to a change in living circumstance – bedlinen seems not to be a significant item chosen to accompany participants across different stages of their lives, pointing to the lack of connection and emotional durability. The transition between childhood to adulthood also challenges the longevity of bedlinen designed specifically for certain age groups or themes. The design of bedlinen requires a more timeless approach so that the product can transition throughout a lifetime.

A change in mattress size impacts bedlinen longevity

A common reason for bedlinen disposal was due to a change in mattress size. Inevitably, consumers grow and change mattress sizes to suit living circumstances. With the evolution of standardised mattress sizing (Parsons, 1972), bedlinen has also adopted the same standards, creating greater compatibility between these products. However, this has potentially created an unanticipated secondary complication for bedlinen longevity where users need to replace

their bedlinen due to normalised behavior of changing mattress sizes.

Users expect their bedlinen to be comfortable

Consistent with existing literature (Rao et al., 2023), comfort is a primary expectation for bedlinen. Given that bedlinen is in close contact with our bodies for six to ten hours each night, and the recent emphasise on sleep hygiene for our health (*Sleep Hygiene: Good Sleep Habits*, 2024), a comfortable sleep experience is essential for overall well-being and quality rest. However, as Shove (2003) posits, an escalating desire for comfort can be detrimental to sustainability.

The survey reveals that participants dispose of bedlinen in favor of more comfortable, higher quality fabric. Comfort also impacts if and how bedlinen is repaired, as some users no longer readily tolerate discomfort of repair sites and prefer to acquire a replacement.

Users expect their bedlinen to 'stay new'

A frequently mentioned issue regarding bedlinen longevity was fading, discolouration and staining of sheets. From a functional perspective, staining and discolouration do not compromise the utility of bedlinen. Thus, these issues are not a concern of function, but rather an aesthetic expectation of bedlinen to maintain its 'newness'. The desire for bedlinen to remain unchanged and in 'near-new' appearance stems from historic representations of hygiene, status, wealth and morality (Douglas, 2003; Healy, 2009; Shove, 2003) and continues today with the expectation for products to maintain their 'near-new' characteristics (Chapman, 2015; Walker, 1995).

The practice and results of repairing bedlinen include barriers

While some participants reported actively repairing their bedlinen, there was also strong belief amongst survey participants that once bedlinen begins to tear, repair is no longer an option to return the bedlinen to use-life. The survey participants' concern that repair cannot return sheets or worn elastic to a high level of durability may reflect today's diminished repair skills, access to tools and not having time to conduct the required types of repair.

While the act of repair requires technical skills, access to resources, problem-solving abilities and time, it offers a low-energy, low-carbon option that avoids the current drawbacks of other approaches such as recycling via chemical or mechanical recovery. It is also true that a proportion of torn and worn bedlinen cannot be repaired back to the original function and requires other circular strategies such as reuse, upcycling and downcycling.

Conclusion

This paper has introduced expectations, care and repair strategies employed by Australian users towards domestic bedlinen. These practices are interrelated and reveal differing levels of influence on the longevity of bedlinen, encompassing both beneficial and detrimental effects.

Given the unprecedented and interconnected environmental challenges we face, it is crucial to understand the impact of user behavior upon product longevity, which can then inform the development of impactful circular strategies to extend product use-life for bedlinen.

Encouragingly, bedlinen has great potential for extended longevity. This paper outlines some of the specific areas that have opportunity for further research. Nevertheless, efforts to address these opportunities must be supported by systems beyond the individual to enable greater longevity and transformational environmental change.

References

- Ahirwar, M., Khatkar, V., & Behera, B. K. (2020). An integrated approach to develop performance index of bed linen fabric. *Journal of Industrial Textiles*, 51(1_suppl), 842S-855S. <https://doi.org/10.1177/1528083720942963>
- Appadurai, A. (1988). *The social life of things: Commodities in cultural perspective*. Cambridge University Press.
- Ayling-Smith, B. (2018). The Bedsheet: From Linen Cupboard to Art Gallery. *TEXTILE*, 16(3), 287-300. <https://doi.org/10.1080/14759756.2018.1432142>
- Bakker, C. A., Mugge, R., Boks, C., & Oguchi, M. (2021). Understanding and managing product lifetimes in support of a circular economy. *Journal of Cleaner Production*, 279, 123764. <https://doi.org/https://doi.org/10.1016/j.jclepro.2020.123764>
- Barnard, M. (2014). *Fashion theory : an introduction*. Routledge.
- Chanda, T., Ahirwar, M., & Behera, B. K. (2020). Appraisal of bed linen performance with respect to sleep quality. *Textile & Leather Review*, 3(1), 19-29. DOI: 10.31881/TLR.2020.01
- Chapman, J. (2015). *Emotionally durable design : objects, experiences and empathy* (Second edition. ed.). London New York : Routledge, Taylor & Francis Group.
- Cooper, T. (2020). Slower Cycles: An Essential Characteristic of the Circular Economy. In S. Eisenriegler (Ed.), *The Circular Economy in the European Union: An Interim Review* (pp. 99-116). Springer International Publishing. https://doi.org/10.1007/978-3-030-50239-3_9
- Cotton, L., Hayward, A. S., Lant, N. J., & Blackburn, R. S. (2020). Improved garment longevity and reduced microfibre release are important sustainability benefits of laundering in colder and quicker washing machine cycles. *Dyes and Pigments*, 177, 108120. <https://doi.org/https://doi.org/10.1016/j.dye.2019.108120>
- Douglas, M. (2003). *Purity and danger: an analysis of concepts of pollution and taboo*. London : Routledge.
- Dubale, M., Ejegu, H., Mamuye, W., & Addis, S. (2021). Development of Bed Linen Performance Index. *Journal of Engineering*, 2021, 1220130. <https://doi.org/10.1155/2021/1220130>
- Gnanapragasam, A., Oguchi, M., Cole, C., & Cooper, T. (2017). Consumer expectations of product lifetimes around the world: a review of global research findings and methods. In (pp. 464-469). <https://doi.org/10.3233/978-1-61499-820-4-464>
- Godin, L., Senja, L., & Sahakian, M. (2020). Doing laundry in consumption corridors: wellbeing and everyday life. *Sustainability: Science, Practice and Policy*, 16(1), 99-113. <https://doi.org/10.1080/15487733.2020.1785095>
- Gram-Hanssen, K., & Bech-Danielsen, C. (2004). House, home and identity from a consumption perspective. *Housing, Theory and Society*, 21(1), 17-26. <https://doi.org/10.1080/14036090410025816>
- Harper, D. (2023). Repair. Etymology Online. Retrieved 1 October from <https://www.etymonline.com/word/repair>
- Healy, R. (2009). *Striptease: An investigation of curatorial practices for fashion in the museum*
- Jensen, P. B., Haase, L. M., & Laursen, L. N. (2021). A Practical Approach to Companies' Transformation toward Product Longevity: A Best-Case Study. *Sustainability*, 13(23). https://mdpi-res.com/d_attachment/sustainability/sustainability-13-13312/article_deploy/sustainability-13-13312.pdf?version=1638357201
- Kamalha, E., Zeng, Y., Mwasiagi, J. I., & Kyatuheire, S. (2013). The comfort dimension; a review of perception in clothing. *Journal of Sensory Studies*, 28(6), 423-444. DOI: 10.1111/joss.12070
- Kergoat, M., Giboreau, A., Nicod, H., Faye, P., Diaz, E., Beetschen, M.-A., & Meyer, T. (2012). CONSUMER PREFERENCE FOR TACTILE SOFTNESS: A QUESTION OF AFFECT INTENSITY? [<https://doi.org/10.1111/j.1745-459X.2012.00388.x>]. *Journal of Sensory Studies*, 27(4), 232-246. <https://doi.org/https://doi.org/10.1111/j.1745-459X.2012.00388.x>
- Laitala, K., Boks, C., & Klepp, I. G. (2011). Potential for environmental improvements in laundering. *International journal of consumer studies*, 35(2), 254-264. <https://doi.org/https://doi.org/10.1111/j.1470-6431.2010.00968.x>
- Lowry, E. (2020). Household textiles 1660-1850: hidden items of material culture from the country house. *Family & community history*, 23(2), 95-118. <https://doi.org/10.1080/14631180.2020.1820717>
- Maycroft, N. (2024). A culture of visible mending: improvisation, or bodging the job? https://repository.lincoln.ac.uk/articles/conference_contribution/A_culture_of_visible_mending_improvisation_or_bodging_the_job_/25167428

- McLaren, A., Oxborrow, L., Cooper, T., Hill, H., & Goworek, H. (2015). Clothing longevity perspectives: exploring consumer expectations, consumption and use. In Product Lifetimes and the Environment (PLATE) Conference proceedings, [Nottingham Trent University], Nottingham, 17-19 June 2015. (pp. 229-235). Nottingham Trent University: CADBE.
- Merriam-Webster. (2017). A Tale of Two 'Repairs'. Merriam-Webster. Retrieved 1 October from <https://www.merriam-webster.com/wordplay/a-tale-of-two-repairs>
- Parsons, H. M. (1972). The Bedroom. Human Factors, 14(5), 421-450. <https://doi.org/10.1177/001872087201400505>
- Rao, N., Salvidge, C., Doriza, A., & Downing, P. (2023). Citizen Insights: Estimating the longevity of home textiles in the UK. WRAP. <https://wrap.org.uk/resources/report/citizen-insights-estimating-longevity-home-textiles-uk#download-file>
- Rinkinen, J., Jalas, M., & Shove, E. (2015). Object relations in accounts of everyday life. Sociology, 49(5), 870-885. <https://doi.org/10.1177/0038038515577910>
- Shove, E. (2003). Comfort, cleanliness and convenience : the social organization of normality. BERG.
- Shove, E. (2004). Sustainability, System Innovation and the Laundry System Innovation and the Transition to Sustainability. In: Edward Elgar Publishing. <https://doi.org/10.4337/9781845423421.00014>
- Sleep Hygiene: Good Sleep Habits. (2024). Sleep Health Foundation. <https://www.sleephealthfoundation.org.au/sleep-topics/sleep-hygiene-good-sleep-habits>
- Spelman, E. V. (2002). Repair : the impulse to restore in a fragile world. Beacon Press Boston.
- Sundaresan, S., Ramesh, M., Sabitha, V., & Ramesh, V. (2016). A detailed analysis on physical and comfort properties of bed linen woven fabrics. International Journal of advance researn and innovative ideas in education, 2, 1649 to 1658.
- Tronto, J. C. (2013). Caring Democracy : Markets, Equality, and Justice. New York University Press. <http://ebookcentral.proquest.com/lib/unsw/detail.action?docID=1153346>
- Walker, S. (1995). The Environment, Product Aesthetics and Surface. Design Issues, 11(3), 15-27. <https://doi.org/10.2307/1511767>
- Yates, L., & Evans, D. (2016). Dirtying Linen: Re-evaluating the sustainability of domestic laundry. Environmental Policy and Governance, 26(2), 101-115. <https://doi.org/https://doi.org/10.1002/eet.1704>