

Applying Human Factors and Ergonomics principles to the design of dementia care environments

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Design of dementia care environments is an important topic due to an increasing population of people with dementia (PWDem). In 2010, there were 35.6 million people living with dementia¹. By 2050 there may be as many as 115.4 million people across the globe suffering from dementia¹.

Human Factors and Ergonomics (HFE) explores a problem by looking at the people within a system and their interactions with each other and the system. HFE design is likely to be useful in dementia care home design as it accounts for human limitations (physical, cognitive and behavioural). There is a growing body of literature on design in dementia care environments, however the extent to which current design features and design guidelines map on to HFE principles is unclear and there are inconsistencies within the literature. The aims of this poster are to outline:

1. Consistencies and inconsistencies in the literature
2. Methodological quality of the literature
3. Current use of HFE principles in dementia care home design

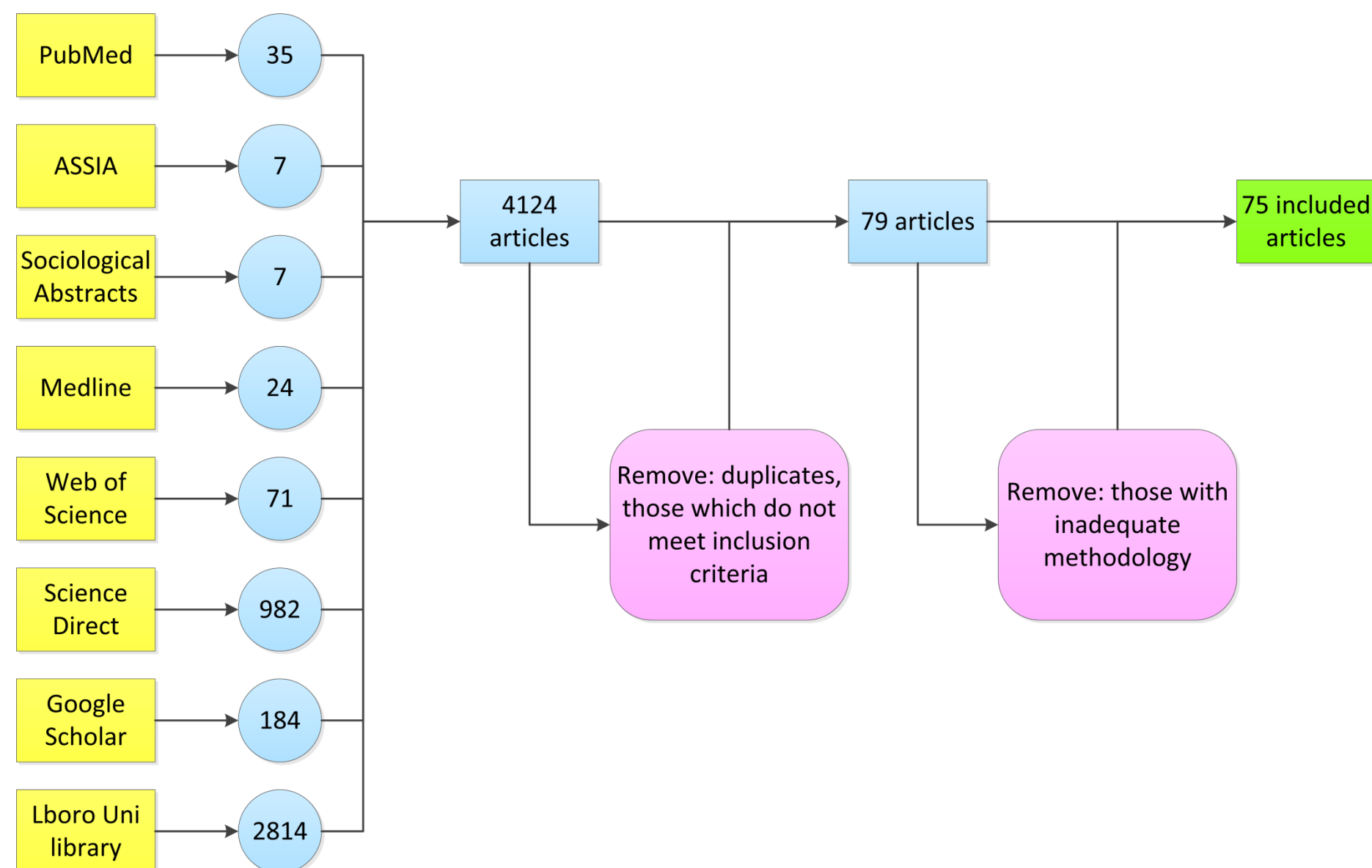


Figure 1: Flowchart outlining process used to identify papers eligible for inclusion in literature review



Figure 2: Lounge area of a dementia care home. In line with current dementia design recommendations, it has a non-institutional appearance and is "homelike".

Method

- Systematic literature review on design features of dementia care environments including a critical appraisal of methodology and mapping to HFE principles.
- Searches of databases including Google Scholar, Science Direct, Web of Science and PubMed using a wide range of search terms relating to dementia and design (Fig 1).
- Critical appraisal of included articles using the 'Mixed Methods Appraisal Tool' (MMAT)².

Results

Consistencies and inconsistencies

- Outdoor spaces may impact positively on quality of life but concerns over safety and accessibility, and mixed views of behavioural effects
- Indoor environment thought to affect behaviour and quality of life. Poor design linked to problems with activities of daily living (ADLs). Non-institutional environments preferred (Fig. 2) but lack of consensus on effects of small scale environments
- Strength of impact of lighting on sleep unclear
- Balance between privacy and sociability important and **several references to ADLs and Instrumental ADLs highlighting importance**
- Safety important but inappropriate security measures could cause further problems
- Special care units may be beneficial to all stakeholders
- Wayfinding cues such as clear signage may be useful for PWDem

Methodological quality of literature

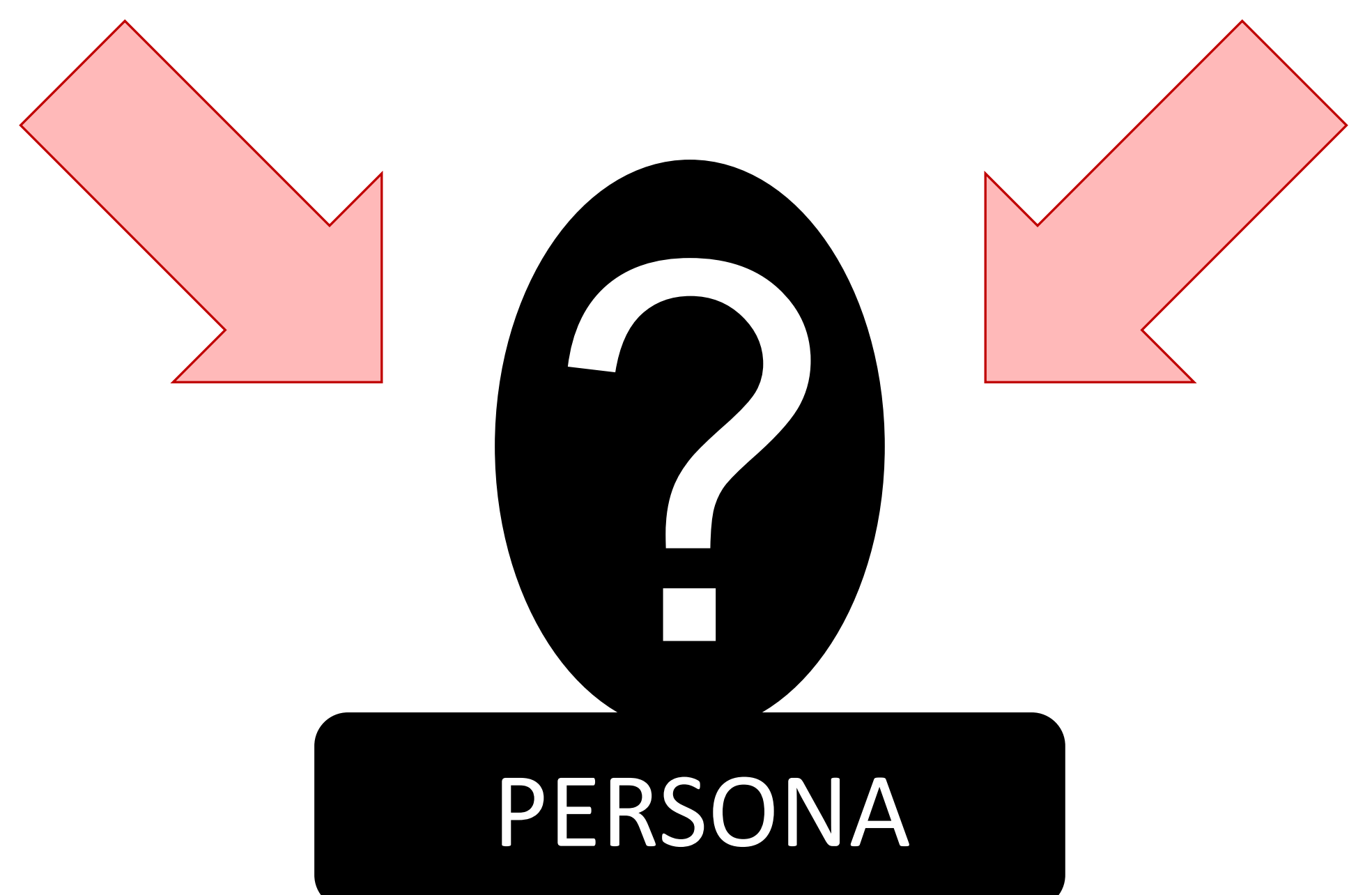
- **Overall methodological quality was good**, over 75% of included papers were either medium or high quality

Current use of HFE principles

- **HFE principles did not appear to be widely used in dementia care home design** but some papers mentioned concepts in line with HFE principles

Current and future work

- Online survey to **assess design professionals' understanding of the terms ADL and IADL** to highlight areas where knowledge could be shared more effectively and in a more meaningful way between clinicians and design professionals, facilitating the use of HFE principles in dementia design.
- **Development of dementia design personas** to communicate design requirements (*currently there are no validated personas to describe people with dementia*).
- **Evaluate and validate** (member check) the dementia design personas with PWDem, their families and friends, designers, HFE specialists and dementia experts.
- **Test the empirically derived and validated dementia design personas** as a design communication tool for dementia care environments.



References

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