Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

A mixed-methods approach to explore the association between age and medication -related problems among adults

A thesis submitted for the degree of

Doctor of Philosophy

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By

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Volume II

Appendix I

Search strategy used in systematic review:

Concept 1 keywords:

hospitalization OR hospitalisation OR hospital OR "secondary care" OR "hospital-admission" OR "hospital admission" OR admit OR "emergency admission" OR "acute care admission"

Concept 2 keywords:

"medication* error" OR "drug use error" OR "medication* related" OR "medicine* related" OR "drug related" OR "drug-induced problem" OR "medicine* related morbidity" OR "drug related morbidity" OR "drug related side effect" OR "drug-related side effect" OR "adverse reaction" OR "side effect of drug" OR "adverse-drug reaction" OR "drug toxicity" OR "adverse drug event" OR "adverse effect" OR "medication* adherence" OR "medication* non adherence" OR "medication* noncompliance"

Concept 3 keywords:

incidence OR prevalence

Observational Designs Filter

Cohort OR compared OR groups OR "case control" OR multivariate

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Embase:

1. 'hospitalization'/exp

2. (hospitalization OR hospitalisation OR hospital OR 'secondary care' OR 'hospital-admission' OR 'hospital admission' OR admit OR 'emergency admission' OR 'acute care admission'):ab,ti
3. #1 OR #2
4. 'medication related problem'/exp
5. 'drug related problem'/exp
6. 'adverse drug reaction'/exp
7. 'medication error'/exp
8. 'medication compliance'/exp
9. ('medication* error' OR 'drug use error' OR 'medication* related' OR 'medicine* related' OR 'drug related' OR 'drug-induced problem' OR 'medicine* related morbidity' OR 'drug related morbidity' OR 'drug related side effect' OR 'drug-related side effect' OR 'adverse reaction' OR 'side effect of drug' OR 'adverse-drug reaction' OR 'drug toxicity' OR 'adverse drug event' OR 'adverse effect' OR 'medication* adherence' OR 'medication* non adherence' OR 'medication* noncompliance'):ab,ti
10. #4 OR #5 OR #6 OR #7 OR #8 OR #9
11. 'prevalence'/exp
12. (incidence OR prevalence):ab,ti
13. #11 OR #12
14. 'clinical article'/exp
15. 'controlled study'/exp
16. 'major clinical study'/exp
17. 'prospective study'/exp
18. 'cohort analysis'/exp
19. 'retrospective study'/exp
20. (cohort OR compared OR groups OR 'case control' OR multivariate):ab,ti
21. #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20
22. #3 AND #10 AND #13 AND #21

Results= 6818 with language (English) and year limitations

Medline (Ovid):

1. exp HOSPITALIZATION/
2. (hospitalization or hospitalisation or hospital or "secondary care" or "hospital-admission" or "hospital admission" or admit or "emergency admission" or "acute care admission")ab,ti.
3. #1 OR #2
4. exp Medication Errors/
5. exp "Drug-Related Side Effects and Adverse Reactions"/
6. exp Medication Adherence/

7. ("medication* error" or "drug use error" or "medication* related" or "medicine* related" or "drug related" or "drug-induced problem" or "medicine* related morbidity" or "drug related morbidity" or "drug related side effect" or "drug-related side effect" or "adverse reaction" or "side effect of drug" or "adverse-drug reaction" or "drug toxicity" or "adverse drug event" or "adverse effect" or "medication* adherence" or "medication* non adherence" or "medication* noncompliance")ab,ti.
8. #4 OR #5 OR #6 OR #7
9. exp PREVALENCE/
10. incidence OR prevalence
11. #9 OR #10
12. exp Cohort Studies/
13. exp Case-Control Studies/
14. exp Comparative Study/
15. exp Prospective Studies/
16. exp retrospective Studies/
17. exp Risk Factors/
18. (cohort or compared or groups or "case control" or multivariate)ab,ti.
19. #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18
20. #3 AND #8 AND #11 AND #19

Results= 1758 with language and year limitations

Web of Science:

1. TS= (hospitalization OR hospitalisation OR hospital OR "secondary care" OR "hospital-admission" OR "hospital admission" OR admit OR "emergency admission" OR "acute care admission")
2. TS= ("medication* error" OR "drug use error" OR "medication* related" OR "medicine* related" OR "drug related" OR "drug-induced problem" OR "medicine* related morbidity" OR "drug related morbidity" OR "drug related side effect" OR "drug-related side effect" OR "adverse reaction" OR "side effect of drug" OR "adverse-drug reaction" OR "drug toxicity" OR "adverse drug event" OR "adverse effect" OR "medication* adherence" OR "medication* non adherence" OR "medication* noncompliance")
3. TS= (incidence OR prevalence)
4. #1 AND #2 AND #3

Results= 3,472 with language and year limitations

Scopus:

1. TITLE-ABS (hospitalization OR hospitalisation OR hospital OR "secondary care" OR "hospital-admission" OR "hospital admission" OR admit OR "emergency admission" OR "acute care admission")
2. TITLE-ABS ("medication* error" OR "drug use error" OR "medication* related" OR "medicine* related" OR "drug related" OR "drug-induced problem" OR "medicine* related morbidity" OR "drug related morbidity" OR "drug related side effect" OR "drug-related side effect" OR "adverse reaction" OR "side effect of drug" OR "adverse-drug reaction" OR "drug toxicity" OR "adverse drug event" OR "adverse effect" OR "medication* adherence" OR "medication* non adherence" OR "medication* noncompliance")
3. TITLE-ABS (incidence OR prevalence)
4. #1 AND #2 AND #3

Results = 3,374_ with language and year limitations

CINAHL:

1. (MH "Hospitalization+")
2. TI (hospitalization OR hospitalisation OR hospital OR "secondary care" OR "hospital-admission" OR "hospital admission" OR admit OR "emergency admission" OR "acute care admission")
3. AB (hospitalization OR hospitalisation OR hospital OR "secondary care" OR "hospital-admission" OR "hospital admission" OR admit OR "emergency admission" OR "acute care admission")
4. S1 OR S2 OR S3
5. (MH "Adverse Drug Event+")
6. (MH "Medication Errors+")
7. (MH "Medication Compliance")
8. TI ("medication* error" OR "drug use error" OR "medication* related" OR "medicine* related" OR "drug related" OR "drug-induced problem" OR "medicine* related morbidity" OR "drug related morbidity" OR "drug related side effect" OR "drug-related side effect" OR "adverse reaction" OR "side effect of drug" OR "adverse-drug reaction" OR "drug toxicity" OR "adverse drug event"

OR "adverse effect" OR "medication* adherence" OR "medication* non adherence" OR "medication* noncompliance")

9. AB ("medication* error" OR "drug use error" OR "medication* related" OR "medicine* related" OR "drug related" OR "drug-induced problem" OR "medicine* related morbidity" OR "drug related morbidity" OR "drug related side effect" OR "drug-related side effect" OR "adverse reaction" OR "side effect of drug" OR "adverse-drug reaction" OR "drug toxicity" OR "adverse drug event" OR "adverse effect" OR "medication* adherence" OR "medication* non adherence" OR "medication* noncompliance")
10. S5 OR S6 OR S7 OR S8 OR S9
11. (MH "Prevalence")
12. TI (incidence OR prevalence)
13. AB (incidence OR prevalence)
14. S11 OR S12 OR S13
15. (MH "Prospective Studies+")
16. (MH "Retrospective Design")
17. (MH "Case Control Studies+")
18. TI (cohort OR compared OR groups OR "case control" OR multivariate)
19. AB (cohort OR compared OR groups OR "case control" OR multivariate)
20. S15 OR S16 OR S17 OR S18 OR S19
21. S4 AND S10 AND S14 AND S20

Results= 724 with language and year limitations

PsycINFO:

1. DE "Hospitalization" OR DE "Commitment (Psychiatric)" OR DE "Hospital Admission" OR DE "Hospital Discharge" OR DE "Psychiatric Hospitalization"
2. TI (hospitalization OR hospitalisation OR hospital OR "secondary care" OR "hospital-admission" OR "hospital admission" OR admit OR "emergency admission" OR "acute care admission")
3. AB (hospitalization OR hospitalisation OR hospital OR "secondary care" OR "hospital-admission" OR "hospital admission" OR admit OR "emergency admission" OR "acute care admission")
4. S1 OR S2 OR S3
5. DE "Side Effects (Drug)" OR DE "Drug Addiction" OR DE "Drug Allergies" OR DE "Drug Dependency" OR DE "Drug Sensitivity"
6. DE "Treatment Compliance"
7. TI ("medication* error" OR "drug use error" OR "medication* related" OR "medicine* related" OR "drug related" OR "drug-induced problem" OR "medicine* related morbidity" OR "drug related morbidity" OR "drug related side effect" OR "drug-related side effect" OR "adverse reaction" OR "side effect of

drug" OR "adverse-drug reaction" OR "drug toxicity" OR "adverse drug event" OR "adverse effect" OR "medication* adherence" OR "medication* non adherence" OR "medication* noncompliance")

8. AB ("medication* error" OR "drug use error" OR "medication* related" OR "medicine* related" OR "drug related" OR "drug-induced problem" OR "medicine* related morbidity" OR "drug related morbidity" OR "drug related side effect" OR "drug-related side effect" OR "adverse reaction" OR "side effect of drug" OR "adverse-drug reaction" OR "drug toxicity" OR "adverse drug event" OR "adverse effect" OR "medication* adherence" OR "medication* non adherence" OR "medication* noncompliance")
9. S5 OR S6 OR S7 OR S8
10. TI (incidence OR prevalence)
11. AB (incidence OR prevalence)
12. S10 OR S11
13. DE "Prospective Studies" OR DE "Retrospective Studies"
14. TI (cohort OR compared OR groups OR "case control" OR multivariate)
15. AB (cohort OR compared OR groups OR "case control" OR multivariate)
16. S13 OR S14 OR S15
17. S4 AND S9 AND S12 AND S16

Results= 236 with language and year limitations.

Cochrane:

1. [mh “hospitalization]
2. (hospitalization OR hospitalisation OR hospital OR "secondary care" OR "hospital-admission" OR "hospital admission" OR admit OR "emergency admission" OR "acute care admission"):ti,ab,kw
3. #1 OR #2
4. [mh “medication errors]
5. [mh “Drug-Related Side Effects and Adverse Reactions]
6. [mh “medication adherence]
7. ("medication* error" OR "drug use error" OR "medication* related" OR "medicine* related" OR "drug related" OR "drug-induced problem" OR "medicine* related morbidity" OR "drug related morbidity" OR "drug related side effect" OR "drug-related side effect" OR "adverse reaction" OR "side effect of drug" OR "adverse-drug reaction" OR "drug toxicity" OR "adverse drug event" OR "adverse effect" OR "medication* adherence" OR "medication* non adherence" OR "medication* noncompliance"):ti,ab,kw
8. #4 OR #5 OR #6 OR #7
9. [mh “prevalence]
10. (incidence OR prevalence):ti,ab,kw

11. #9 OR #10
12. [mh “cohort studies]
13. [mh “case-control studies]
14. [mh “comparative study]
15. [mh “prospective studies]
16. [mh “retrospective studies]
17. [mh “risk factors]
18. cohort OR compared OR groups OR "case control" OR multivariate
19. #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18
20. #3 AND #8 AND #11 AND #19

Results= 237 reviews with year limitation.

Global health

1. title:(hospitalization OR hospitalisation OR hospital OR "secondary care" OR "hospital-admission" OR "hospital admission" OR admit OR "emergency admission" OR "acute care admission")
2. ab:(hospitalization OR hospitalisation OR hospital OR "secondary care" OR "hospital-admission" OR "hospital admission" OR admit OR "emergency admission" OR "acute care admission")
3. #1 OR #2
4. title:("medication error" OR "drug use error" OR "medication related" OR "medicine related" OR "drug related" OR "drug-induced problem" OR "medicine related morbidity" OR "drug related morbidity" OR "drug related side effect" OR "drug-related side effect" OR "adverse reaction" OR "side effect of drug" OR "adverse-drug reaction" OR "drug toxicity" OR "adverse drug event" OR "adverse effect" OR "medication adherence" OR "medication non adherence" OR "medication noncompliance")
5. ab:("medication error" OR "drug use error" OR "medication related" OR "medicine related" OR "drug related" OR "drug-induced problem" OR "medicine related morbidity" OR "drug related morbidity" OR "drug related side effect" OR "drug-related side effect" OR "adverse reaction" OR "side effect of drug" OR "adverse-drug reaction" OR "drug toxicity" OR "adverse drug event" OR "adverse effect" OR "medication adherence" OR "medication non adherence" OR "medication noncompliance")
6. #4 OR #5
7. title:(incidence OR prevalence)
8. ab:(incidence OR prevalence)
9. #7 OR #8
10. #3 AND #6 AND #9

Results= 714 with language and year limitations

Quality assessment exercise for finding the suitable tool:

Studies	Keywords	Critical Appraisal assessment
Systematic Review of Medicine-Related Problems in Adult Patients with Atrial Fibrillation on Direct Oral Anticoagulants 2017	Medication related problem, Medication-therapy problems, Drug related problem, Drug related morbidity, Drug induced problem, Drug therapy problem, Drug management problem, Therapy-related problems, Treatment related problem, Adverse drug reaction, Adverse drug event, Medication error, Medication adherence, Medication compliance, Non-compliance	They used the Critical Appraisal Skills Programme (CASP) to grade the overall strength of the evidence as high, moderate, low, or insufficient.
Hospital Admissions Associated with Adverse Drug Reactions: A Systematic Review of Prospective Observational Studies, 2008	adverse drug reaction, adverse reaction, adverse drug event, adverse event, drug-related problem, meta-analysis, and hospital admis- sion.	N/A
Frequency, type and clinical importance of medication history errors at admission to hospital: a systematic review, 2005	” “pharmacists,” “prescrip- tion medications,” “pharmaceutical preparations,” “hospital med- ication systems,” “hospital pharmacy services” and “medical records.”	N/A
Which drugs cause preventable admissions to hospital? A systematic review, 2007	N/A	N/A
Number of drugs most frequently found to be independent risk factors for serious adverse reactions: a systematic literature review, 2015	medication errors OR pharmaceutical preparations/adverse effects OR drug toxicity OR drug therapy/adverse effects) AND risk factors and epidemiologic studies AND drug therapy/adverse effects	N/A
Adverse-Drug-Reaction-Related Hospitalisations in Developed and Developing Countries: A Review of Prevalence and Contributing Factors, 2016	‘adverse drug reactions’, ‘drug related side effects’, ‘adverse drug events’, ‘adverse drug effects’, ‘medicine- related problems’, ‘drug-related problems’, ‘drug toxicity’, ‘drug therapy problems’, ‘adult patients’, ‘elderly patients’, ‘older	N/A

Studies	Keywords	Critical Appraisal assessment
	patients', 'geriatric patients' combined with 'hospitalization', 'emergency admission', 'hospital admission', 'acute care admission' and 'hospitalisation'.	
Percentage of patients with preventable adverse drug reactions and preventability of adverse drug reactions–a meta-analysis, 2012	Adverse drug effect, adverse drug event, adverse drug reaction, drug induces disease, drug induce morbidity, drug related problem, medication error, avoidable, preventable, prevention	They assessed independently the quality and the risk of bias in the original studies in conjunction with data extraction.
A systematic review of hospitalization resulting from medicine-related problems in adult patients, 2014	'medicine related problems', 'hospital' and 'admission'. The search strategy involved use of the three terms in each database as follows: 'medicine related problem(s)' or 'medicine- related problem(s)' or 'medication related problem(s)' or 'medication-related problem(s)' or 'drug therapy problem(s)' or 'drug-therapy problem(s)' or 'drug-related problem(s)' or 'adverse drug reaction(s)' or 'adverse drug event(s)' or 'medication error(s)' or 'medicines related morbidity(s)' or 'drug-related morbidity(s)' or 'drug-induced problem(s)' AND 'admission(s)' or 'hospitalisation(s)' or 'hospitalization(s)' AND 'hospital(s)' or 'clinic(s)' or 'ward(s)' or 'secondary care(s)' or 'infirmary(s)'.	N/A
Hospital admissions due to adverse drug reactions in the elderly. A meta-analysis, 2017	Age, adverse reactions, admission to hospital, drugs, and study design.	N/A
Hospital admissions associated with medication non-adherence: a systematic review of prospective observational studies, 2018	(Patients OR human) AND (drug-related problem OR adverse drug events OR non-adherence) AND (incidence OR prevalence)	They used Crombie checklist
Prevalence and Nature of Medication Administration Errors in Health Care Settings: A Systematic Review of Direct Observational Evidence, 2013	error definition (including error, medication error(s), incident report, near miss, drug error, treatment error, medication safety, drug safety, preventable adverse event, adverse event, medical error, clinical incident, adverse drug event, medication incident), epidemiology (rate,	N/A

Studies	Keywords	Critical Appraisal assessment
	prevalence, incidence, epidemiology), and error type (including drug/medication/ medicine administration, dose/drug/medicine/medication preparation, drug/medication/medicine delivery, omission, drug utilization, commission, drug/medication/medicine supply, drug/medication/medicine handling, self-medication, self-administration)	
Interventions to improve the appropriate use of polypharmacy in older people: a Cochrane systematic review, 2015	Polypharmacy, inappropriate prescribing, potentially inappropriate medication list, deprescriptions, medication error, elder* or geriatric*, elderly, randomized controlled trial, multicenter study, intervention? or effect? or impact? or controlled or control group?	They assessed risk of bias using the Cochrane Collaboration's assessment tool and used GRADE (Grades of Recommendation, Assessment, Development and Evaluation) to assess the quality of the evidence for each primary outcome

Quality assessment of included studies:

Note:

Yes=1, No=0, Unclear=0, Not applicable=0

Study ID	Was the sample representative of the target population ?	Were the criteria for inclusion in the sample clearly defined?	Was the sample size adequate?	Were outcomes assessed using objective criteria?	If comparisons are being made, was there sufficient description of the groups?	Withdrawals: Outcomes Described and Included in Analyses?	Were outcomes measured in a reliable way?	Are all confounding factors or subgroups identified and Addressed?	Was the data analysis conducted with sufficient coverage of the confounding factors or subgroups ?	Was there appropriate statistical analysis?
Adedapo 2020	Yes	Yes	Unclear	Yes	Yes	Not applicable	Yes	Yes	Yes	Yes
Ahern 2014	Yes	Yes	Unclear	Yes	Yes	Not applicable	Yes	Not applicable	Not applicable	Yes
Alexopoulou 2008	Yes	Yes	Not applicable	Yes	Yes	Not applicable	Yes	Yes	Yes	Yes
Alvarez 2013	Yes	Yes	Unclear	Yes	Yes	Not applicable	Yes	Yes	Yes	Yes
Angamo 2017	Yes	Yes	Unclear	Yes	Yes	Not applicable	Yes	Yes	Yes	Yes
Asio 2023	Yes	Yes	Not applicable	Yes	Yes	Not applicable	Yes	Yes	Yes	Yes
Brvar 2009	Yes	Yes	Unclear	Yes	Yes	Not applicable	Yes	Yes	Yes	Yes

CabrÃ© 2018	Yes	Yes	Unclear	Yes	Yes	Not applicable	Yes	Yes	Yes	Yes
Cahir 2023	Yes	Yes	Not applicable	Yes	Yes	Not applicable	Yes	Yes	Yes	Yes
Dechanont 2021	Yes	Yes	Unclear	Yes	Yes	Not applicable	Yes	Yes	Yes	Yes
Fattinger 2000	Yes	Yes	Unclear	Yes	Yes	Not applicable	Yes	Unclear	Unclear	Yes
Giardina 2018	Yes	Yes	Unclear	Yes	Yes	Not applicable	Unclear	Yes	Yes	Yes
Hopf 2008	Yes	Yes	Not applicable	Yes	Yes	Not applicable	Yes	Not applicable	Not applicable	Yes
Jolivot 2016	NO	Yes	Yes	Yes	Yes	Not applicable	Yes	Not applicable	Not applicable	Yes
Karuppannan 2013	Yes	Yes	Yes	Yes	Yes	Not applicable	Yes	Not applicable	Not applicable	Yes
Komagamine 2019	Yes	Yes	Unclear	Yes	Yes	Not applicable	Yes	Yes	Yes	Yes
Kongkaew 2013	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lagnaoui 2000	Yes	Yes	Unclear	Yes	Yes	Not applicable	Unclear	Not applicable	Not applicable	Yes
Lavan 2019	NO	Yes	Yes	Yes	Yes	Not applicable	Unclear	Not applicable	Not applicable	Yes
Lea 2019	Yes	Yes	Unclear	Yes	Yes	Not applicable	Yes	Yes	Yes	Yes
Laroche 2023	Yes	Yes	Yes	Yes	Yes	Not applicable	Yes	Not applicable	Not applicable	Yes
Leendertse 2008	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Li 2021	Yes	Yes	Not applicable	Yes	Yes	Not applicable	NO	Yes	Yes	Yes
Luttikhuis 2022	Yes	Yes	Yes	Yes	Yes	Not applicable	Yes	Yes	Yes	Yes
Marcum 2012	Unclear	Yes	Unclear	Yes	Yes	Not applicable	Yes	Yes	Yes	Yes
Marcum 2012	NO	Yes	Unclear	Yes	No	Not applicable	Yes	Yes	Yes	Yes
McLachlan 2014	Yes	Unclear	Unclear	Yes	Yes	Not applicable	Unclear	Not applicable	Not applicable	Yes
Marikova 2021	Yes	Yes	Not applicable	Yes	Yes	Not applicable	Yes	Not applicable	Not applicable	Yes
Mjorndal 2002	Yes	Yes	Unclear	Yes	Yes	Not applicable	Unclear	Not applicable	Not applicable	Yes
Mouton 2016	Yes	Yes	Yes	Yes	Yes	Not applicable	Yes	Yes	Yes	Yes
Ocovska 2022	Yes	Yes	Yes	Yes	Yes	Not applicable	Yes	Not applicable	Not applicable	Yes
Olivier 2002	Yes	Yes	Yes	Yes	Unclear	Not applicable	Yes	Unclear	Unclear	Unclear
Olivier 2009	Yes	Yes	Yes	Yes	Yes	Not applicable	Unclear	Yes	Yes	Yes
Onder 2002	Yes	Unclear	Unclear	Yes	Not applicable	Not applicable	Not applicable	Yes	Yes	Yes
PedrÃ³s 2016	Yes	Unclear	Unclear	Yes	Yes	Not applicable	Not applicable	Not applicable	Not applicable	Yes
Pedros 2014	Yes	Yes	Yes	Yes	Yes	Not applicable	Unclear	Yes	Yes	Yes

PerezMenendez-Conde 2011	Yes	Yes	Unclear	Yes	Yes	Not applicable	Yes	Yes	Yes	Yes
Pirmohamed 2004	Yes	Yes	Unclear	Yes	Yes	Not applicable	Yes	Not applicable	Not applicable	Yes
Pourseyed 2009	Yes	Yes	Unclear	Yes	Yes	Not applicable	Not applicable	Not applicable	Not applicable	Yes
Pouyanne 2000	Yes	Yes	Unclear	Yes	Yes	Not applicable	Not applicable	Not applicable	Not applicable	Yes
Santamaria-Pablos 2009	Yes	Yes	Not applicable	Yes	Unclear	Not applicable	Yes	Yes	Yes	Unclear
Singh 2011	Yes	Yes	Unclear	Yes	Yes	Not applicable	Not applicable	Unclear	Unclear	Yes
Smeaton 2020	Yes	Yes	Not applicable	Yes	Not applicable	Not applicable	Yes	Yes	Yes	Yes
Somers 2010	Yes	Unclear	Not applicable	Yes	Yes	Not applicable	Yes	Not applicable	Not applicable	Yes
vanderHooft 2008	Yes	Unclear	Unclear	Yes	Not applicable	Not applicable	Yes	Not applicable	Not applicable	Yes
Varallo 2014	Yes	Yes	Not applicable	Yes	Yes	Not applicable	Not applicable	Yes	Yes	Yes
vonEuler 2006	Yes	Unclear	Not applicable	Yes	Yes	Not applicable	Not applicable	Not applicable	Not applicable	Unclear
Wawruch 2009	Yes	Yes	Yes	Yes	Yes	Not applicable	Unclear	Yes	Yes	Yes

The bivariate statistical tests applied in the included studies.

Author (year)	Age variable As Continuous	Test used	P-value	Age variable As Categorical	Test used	P-value
Adedapo, 2021	NA	NA	NA	Categorical	Bivariate analyses using regression	NS
Ahern, 2014	Continuous (Mean+SD) and Median 95%cl	Student *t* test, non-parametric test	Sig	NA	NA	NA
Alexopoulou, 2008	Continuous Means (95% confidence interval (CI).	Student's t-test	Sig	Categorical	Chi-square analysis	NS
Alvarez, 2013	Continuous (Mean ± standard error)	Student *t* test	NS	NA	NA	NA
Angamo, 2017	Continuous Median (IQR)	Mann-Whitney tests	NS	NA	NA	NA
Asio 2023	Continuous (Mean) and Median	NA	NA	NA	NA	NA
Brvar, 2009	Continuous (Mean and range).	Pearson's correlation was used to correlate age	Non-reported	NA	NA	NA
Cabré, 2018	Continuous (Mean+SD)	Student- t test	NS	Categorical	Chi-square test or Fisher's exact test	Sig
Cahir 2023	Continuous (Mean+SD)	NA	NA	NA	NA	NA
Dechanont, 2021	NA	NA	NA	Categorical	Chi-square analysis	Sig
Fattinger, 2000	Continuous Median	Kruskal-Wallis comparison	NS	NA	NA	NA
Giardina, 2018	Continuous Median (IQR)	*U* Mann–Whitney test,	NS	Categorical	Bivariate analyses using regression	NS
Hopf, 2008	Continuous Median	Mann–Whitney test	NS	NA	NA	NA
Jolivot, 2016	Continuous Median (IQR)	Mann–Whitney test	NS	NA	NA	NA
Karuppannan, 2013	NA	NA	NA	Categorical	Chi-square analysis	Sig
Komagamine, 2019	Continuous Median (IQR)	NA	NA	Categorical	Bivariate analyses using regression	NS

Author (year)	Age variable As Continuous	Test used	P-value	Age variable As Categorical	Test used	P-value
Kongkaew, 2013	NA	NA	NA	Categorical	Pearson chi-squared test	Sig
Lagnaoui, 2000	Continuous (Mean)	Kruskal-Wallis comparison	NS	NA	NA	NA
Lavan, 2019	Continuous Median (IQR), range	Mann-Whitney U and Kruskal- Wallis tests	NS	NA	NA	NA
Laroche 2023	Continuous Mean and Median	95% confidence interval	Sig	Categorical	Chi-square analysis	Sig
Lea, 2019	Continuous Median (range)	Mann-Whitney test	NS	NA	NA	NA
Leendertse, 2008	Continuous Mean+SD	NA	NA	NA	NA	NA
Li 2021	Continuous Median (IQR)	Mann-Whitney U	Sig	NA	NA	NA
Luttikhuis 2022	Continuous Median (IQR)	NA	NA	NA	NA	NA
Marcum, 2012a	NA	NA	NA	Categorical	Chi-square analysis	NS
Marcum, 2012b	NA	NA	NA	Categorise (crude OR,95%cl)	Bivariate analyses using regression	NS
Marikova 2021	Continuous Median	Mann-Whitney test	NS	NA	NA	NA
McLachlan, 2014	Continuous Mean (range)	Student t-test	Sig	NA	NA	NA
Menéndez-Conde, 2011	Continuous (Mean+SD)	NA	NA	Categorical	Chi-square analysis	NS
Mjörndal, 2002	Continuous Median (range)	Wilcoxon sum	NS	NA	NA	NA
Mouton, 2016	Continuous (Median (IQR)	NA	NA	NA	NA	NA
Ocovska 2022	Continuous (Median (IQR)	NA	NA	NA	NA	NA

Author (year)	Age variable As Continuous	Test used	P-value	Age variable As Categorical	Test used	P-value
Olivier, 2002	Continuous Mean+SD	No test	NA	NA	NA	NA
Olivier, 2009	Continuous (Mean+SD)	Student *t* test	NS	Categorical	Chi-square analysis or Fisher's Exact test	NS
Onder, 2002	Sever ADR was Continuous (Mean+SD)	NA	NA	Categorical	Chi-square analysis	NS/ Sig with sever ADR only
Pedrós, 2014	Continuous (Median)	Mann–Whitney test	Sig	Categorical	Chi-square analysis	Sig
Pedrós, 2016	NA	NA	NA	Categorical	No association reported	NA
Pirmohamed, 2004	Continuous (Median, interquartile range	Mann-Whitney U test	Sig	NA	NA	NA
Pourseyed, 2009	Continuous Mean (rang)	Student *t* test	Sig	NA	NA	NA
Pouyanne, 2000	NA	NA	NA	Categorical	Chi-square analysis	Sig
Santamaria-Pablos, 2009	Continuous SD (95% CI)	Student *t* test	Sig	NA	NA	NA
Singh, 2011	Continuous (Mean ± SD)	Not reported	Ns	NA	NA	NA
Smeaton, 2020	Not clear	Bivariate analyses using regression	NS	Not clear	Not clear	
Somers, 2010	Continuous Mean	Not reported	Sig	NA	NA	NA
van der Hooft, 2008	NA	NA	NA	Categorical	Confidence intervals (95%CI) were calculated	NS
Varallo, 2014	NA	NA	NA	Categorical	Chi-square analysis	NS
von Euler, 2006	Continuous Mean	NA	NA	NA	NA	NA
Wawruch, 2009	NA	NA	NA	Categorical	Chi-square analysis	NS

The PRISMA 2020 checklist: An updated guideline for reporting systematic reviews.

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	√
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	NA
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	√
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	√
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	√
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	√
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	√
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	√
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	√
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	√
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	NA
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	√
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	√
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention	NA

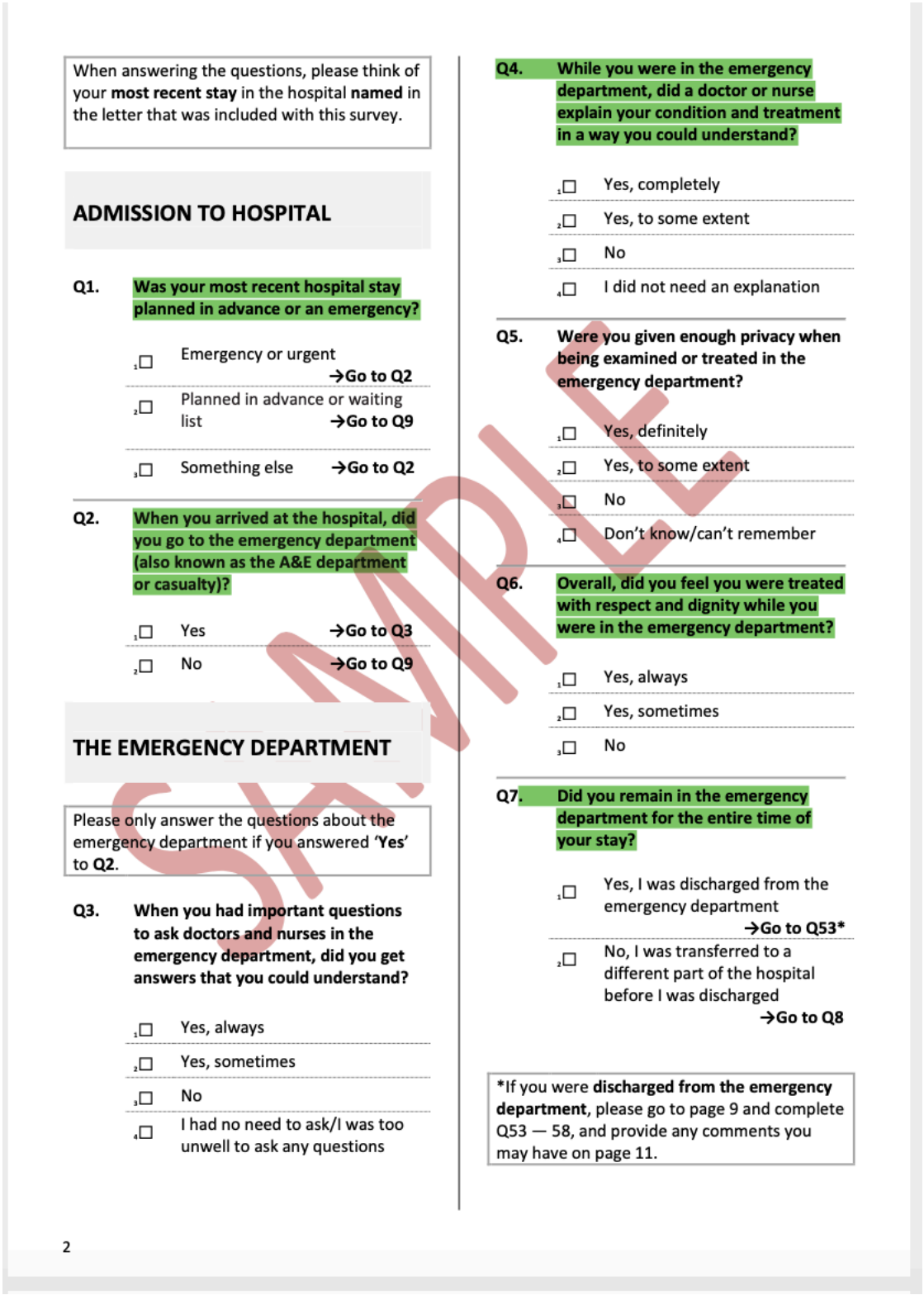
Section and Topic	Item #	Checklist item	Location where item is reported
		characteristics and comparing against the planned groups for each synthesis (item #5)).	
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	NA
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	√
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	√
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	√
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	NA
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	NA
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	NA
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	√
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	NA
Study characteristics	17	Cite each included study and present its characteristics.	√
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	√
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	√
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	NA
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	√
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	NA
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	√
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	NA

Section and Topic	Item #	Checklist item	Location where item is reported
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	NA
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	√
	23b	Discuss any limitations of the evidence included in the review.	√
	23c	Discuss any limitations of the review processes used.	√
	23d	Discuss implications of the results for practice, policy, and future research.	√
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	√
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	√
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	NA
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	NA
Competing interests	26	Declare any competing interests of review authors.	NA
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	√

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj

Appendix II

The NPES questionnaire with highlighted included questions.



When answering the questions, please think of your **most recent stay** in the hospital **named** in the letter that was included with this survey.

ADMISSION TO HOSPITAL

Q1. **Was your most recent hospital stay planned in advance or an emergency?**

- ☐ Emergency or urgent → **Go to Q2**
- ☐ Planned in advance or waiting list → **Go to Q9**
- ☐ Something else → **Go to Q2**

Q2. **When you arrived at the hospital, did you go to the emergency department (also known as the A&E department or casualty)?**

- ☐ Yes → **Go to Q3**
- ☐ No → **Go to Q9**

THE EMERGENCY DEPARTMENT

Please only answer the questions about the emergency department if you answered '**Yes**' to **Q2**.

Q3. **When you had important questions to ask doctors and nurses in the emergency department, did you get answers that you could understand?**

- ☐ Yes, always
- ☐ Yes, sometimes
- ☐ No
- ☐ I had no need to ask/I was too unwell to ask any questions

Q4. **While you were in the emergency department, did a doctor or nurse explain your condition and treatment in a way you could understand?**

- ☐ Yes, completely
- ☐ Yes, to some extent
- ☐ No
- ☐ I did not need an explanation

Q5. **Were you given enough privacy when being examined or treated in the emergency department?**

- ☐ Yes, definitely
- ☐ Yes, to some extent
- ☐ No
- ☐ Don't know/can't remember

Q6. **Overall, did you feel you were treated with respect and dignity while you were in the emergency department?**

- ☐ Yes, always
- ☐ Yes, sometimes
- ☐ No

Q7. **Did you remain in the emergency department for the entire time of your stay?**

- ☐ Yes, I was discharged from the emergency department → **Go to Q53***
- ☐ No, I was transferred to a different part of the hospital before I was discharged → **Go to Q8**

*If you were **discharged from the emergency department**, please go to page 9 and complete Q53 — 58, and provide any comments you may have on page 11.

2

Q14. Did the staff treating and examining you introduce themselves?

- ☐ 1 Yes, all of the staff introduced themselves
- ☐ 2 Some of the staff introduced themselves
- ☐ 3 Very few or none of the staff introduced themselves
- ☐ 4 Don't know/can't remember

HOSPITAL FOOD

Q15. How would you rate the hospital food?

- ☐ 1 Very good **→Go to Q16**
- ☐ 2 Good **→Go to Q16**
- ☐ 3 Fair **→Go to Q16**
- ☐ 4 Poor **→Go to Q16**
- ☐ 5 I did not have any hospital food **→Go to Q20**

Q16. Were you offered a choice of food?

- ☐ 1 Yes, always
- ☐ 2 Yes, sometimes
- ☐ 3 No

Q17. Were you ever unable to eat during mealtimes (e.g. because you were away from the ward, recovering from surgery, etc.)?

- ☐ 1 Yes **→Go to Q18**
- ☐ 2 No **→Go to Q19**
- ☐ 3 Don't know/can't remember **→Go to Q19**

Q18. Were you offered a replacement meal at another time?

- ☐ 1 Yes, always
- ☐ 2 Yes, sometimes
- ☐ 3 No
- ☐ 4 I did not want a meal
- ☐ 5 I was not allowed a meal (e.g. because I was fasting)
- ☐ 6 Don't know/can't remember

Q19. Did you get enough help from staff to eat your meals?

- ☐ 1 Yes, always
- ☐ 2 Yes, sometimes
- ☐ 3 No
- ☐ 4 I did not need help to eat meals

YOUR CARE AND TREATMENT

Q20. When you had important questions to ask a doctor, did you get answers that you could understand?

- ☐ 1 Yes, always
- ☐ 2 Yes, sometimes
- ☐ 3 No
- ☐ 4 I had no need to ask

Q21. Did you feel you had enough time to discuss your care and treatment with a doctor?

- ☐ 1 Yes, definitely
- ☐ 2 Yes, to some extent
- ☐ 3 No

Q22. **When you had important questions to ask a nurse, did you get answers that you could understand?**

- ☐ 1 Yes, always
- ☐ 2 Yes, sometimes
- ☐ 3 No
- ☐ 4 I had no need to ask

Q23. **If you ever needed to talk to a nurse, did you get the opportunity to do so?**

- ☐ 1 Yes, always
- ☐ 2 Yes, sometimes
- ☐ 3 No
- ☐ 4 I had no need to talk to a nurse

Q24. **Were you involved as much as you wanted to be in decisions about your care and treatment?**

- ☐ 1 Yes, definitely
- ☐ 2 Yes, to some extent
- ☐ 3 No

Q25. **How much information about your condition or treatment was given to you?**

- ☐ 1 Not enough
- ☐ 2 The right amount
- ☐ 3 Too much

Q26. **Was your diagnosis explained to you in a way that you could understand?**

- ☐ 1 Yes, completely
- ☐ 2 Yes, to some extent
- ☐ 3 No

Q27. **If your family or someone else close to you wanted to talk to a doctor, did they have enough opportunity to do so?**

- ☐ 1 Yes, definitely
- ☐ 2 Yes, to some extent
- ☐ 3 No
- ☐ 4 No family or friends were involved
- ☐ 5 My family did not want or need information
- ☐ 6 I did not want my family or friends to talk to a doctor

Q28. **Did you find someone on the hospital staff to talk to about your worries and fears?**

- ☐ 1 Yes, definitely
- ☐ 2 Yes, to some extent
- ☐ 3 No
- ☐ 4 I had no worries or fears

Q29. **Did you have confidence and trust in the hospital staff treating you?**

- ☐ 1 Yes, always
- ☐ 2 Yes, sometimes
- ☐ 3 No

Q30. **Were you given enough privacy when discussing your condition or treatment?**

- ☐ 1 Yes, always
- ☐ 2 Yes, sometimes
- ☐ 3 No

OPERATIONS AND PROCEDURES

Examples of **operations** and **procedures** include: bypass surgery, surgery to repair a broken bone, removing an appendix, a colonoscopy, a lumbar puncture/spinal tap, etc.

Q36. Beforehand, did a member of staff explain the risks and benefits of the operation or procedure in a way you could understand?

- ☐ 1 Yes, completely →**Go to Q37**
- ☐ 2 Yes, to some extent →**Go to Q37**
- ☐ 3 No →**Go to Q37**
- ☐ 4 I did not want an explanation →**Go to Q37**
- ☐ 5 I did not have an operation or procedure →**Go to Q40**

Q37. Beforehand, did a member of staff answer your questions about the operation or procedure in a way you could understand?

- ☐ 1 Yes, completely
- ☐ 2 Yes, to some extent
- ☐ 3 No
- ☐ 4 I did not have any questions

Q38. Beforehand, were you told how you could expect to feel after you had the operation or procedure?

- ☐ 1 Yes, completely
- ☐ 2 Yes, to some extent
- ☐ 3 No

Q39. After the operation or procedure, did a member of staff explain how the operation or procedure had gone in a way you could understand?

- ☐ 1 Yes, completely
- ☐ 2 Yes, to some extent
- ☐ 3 No

LEAVING HOSPITAL

Q40. Did you feel you were involved in decisions about your discharge from hospital?

- ☐ 1 Yes, definitely
- ☐ 2 Yes, to some extent
- ☐ 3 No
- ☐ 4 I did not want to be involved

Q41. Were you or someone close to you given enough notice about your discharge?

- ☐ 1 Yes, definitely
- ☐ 2 Yes, to some extent
- ☐ 3 No
- ☐ 4 Don't know/can't remember

Q42. Before you left hospital, did the healthcare staff spend enough time explaining about your health and care after you arrive home?

- ☐ 1 Yes
- ☐ 2 No

Q43. **Before you left hospital, were you given any written or printed information about what you should or should not do after leaving hospital?**

- ☐ 1 Yes
- ☐ 2 No
- ☐ 3 I did not want or need any written or printed information

Q44. **Did a member of staff explain the purpose of the medicines you were to take at home in a way you could understand?**

- ☐ 1 Yes, completely →**Go to Q45**
- ☐ 2 Yes, to some extent →**Go to Q45**
- ☐ 3 No →**Go to Q45**
- ☐ 4 I did not need an explanation →**Go to Q45**
- ☐ 5 I had no medicines →**Go to Q46**

Q45. **Did a member of staff tell you about medication side effects to watch for when you went home?**

- ☐ 1 Yes, completely
- ☐ 2 Yes, to some extent
- ☐ 3 No
- ☐ 4 I did not need an explanation

Q46. **Did a member of staff tell you about any danger signals you should watch for after you went home?**

- ☐ 1 Yes, completely
- ☐ 2 Yes, to some extent
- ☐ 3 No
- ☐ 4 It was not necessary

Q47. **Did hospital staff take your family or home situation into account when planning your discharge?**

- ☐ 1 Yes, completely
- ☐ 2 Yes, to some extent
- ☐ 3 No
- ☐ 4 It was not necessary
- ☐ 5 Don't know/can't remember

Q48. **Did the doctors or nurses give your family or someone close to you all the information they needed to help care for you?**

- ☐ 1 Yes, definitely
- ☐ 2 Yes, to some extent
- ☐ 3 No
- ☐ 4 No family or friends were involved
- ☐ 5 My family or friends did not want or need information

Q49. **Did hospital staff tell you who to contact if you were worried about your condition or treatment after you left hospital?**

- ☐ 1 Yes
- ☐ 2 No
- ☐ 3 Don't know/can't remember

Q50. **Do you feel that you received enough information from the hospital on how to manage your condition after your discharge?**

- ☐ 1 Yes, definitely
- ☐ 2 Yes, to some extent
- ☐ 3 No
- ☐ 4 I did not need any help in managing my condition

OVERALL

Q51. **Overall, did you feel you were treated with respect and dignity while you were in the hospital?**

- ☐ 1 Yes, always
- ☐ 2 Yes, sometimes
- ☐ 3 No

Q52. **Overall... (please circle a number)**

I had a very **poor** experience										I had a very **good** experience
0	1	2	3	4	5	6	7	8	9	10

ABOUT YOU

Q53. **Who was the main person or people who filled in this questionnaire?**

- ☐ 1 The patient (named on the front of the envelope)
- ☐ 2 The patient with the help of someone else
- ☐ 3 A person acting on the patient's behalf

Please keep in mind that all questions should be answered from the point of view of the person named on the envelope.

This includes the following questions.

Q54. **What was the main reason for your most recent stay in hospital?** (Tick **ONE** box only)

- ☐ 1 Tumour/cancer
- ☐ 2 Heart condition
- ☐ 3 Lung condition
- ☐ 4 Neurological condition (including stroke)
- ☐ 5 Orthopaedic condition (e.g. bone or joint issues)
- ☐ 6 Digestive system condition (including gallbladder and appendix issues)
- ☐ 7 Diabetes and related problems
- ☐ 8 Adverse reaction/poisoning
- ☐ 9 Injury and or accident
- ☐ 10 Infection
- ☐ 11 Mental health issue
- ☐ 12 I was admitted for tests and or investigations
- ☐ 13 Don't know/I was not told
- ☐ 14 Other, please specify

Q55. **Do you identify as:**

- ☐ 1 Male?
- ☐ 2 Female?

Q56. **What is your month and year of**

birth? (Please tick the month and write in the year)

1 ☐ January
2 ☐ February
3 ☐ March
4 ☐ April
5 ☐ May
6 ☐ June
7 ☐ July
8 ☐ August
9 ☐ September
10 ☐ October
11 ☐ November
12 ☐ December

(Please write in)

e.g. 1 9 6 1

Y Y Y Y

We ask the next two questions because we would like to know if the people who responded to the survey represent all sections of our society.

Q57. **What is your ethnic or cultural background?**
(Tick **ONE** box only)

White

1 ☐ Irish
2 ☐ Irish Traveller
3 ☐ Any other White background

Black or Black Irish

4 ☐ African
5 ☐ Any other Black background

Asian or Asian Irish

6 ☐ Chinese
7 ☐ Any other Asian background

Other, including mixed background

8 ☐ Other, write in description

Q58. **Do you currently have:**

1 ☐ A medical card?
2 ☐ Private health insurance?
3 ☐ **Both** a medical card and private health insurance?
4 ☐ **Neither** a medical card nor private health insurance?

OTHER COMMENTS

Thank you very much for taking part in this survey. Please feel free to tell us about your hospital stay by answering the questions below. You can use the back page of the questionnaire if you need more space. Comments will be entered into a secure database after removing any information that could identify you.

This anonymised feedback will be looked at by HIQA, the HSE and the Department of Health to try to understand and improve patients' experiences in hospital. We will give examples of feedback in the final survey reports to provide a fuller understanding of patients' experiences.

Q59. Was there anything particularly good about your hospital care?

Q60. Was there anything that could be improved?

Q61. Any other comments or suggestions?

Thank you very much for your help!

Please check that you have answered all of the questions that apply to you.
Please return this questionnaire in the Freepost envelope provided. No stamp is needed.

11

The Good Reporting of a Mixed-Methods Study (GRAMMS) framework used in Chapter 3

Guideline	Section
Describe the justification for using a mixed methods approach to the research question	Methodology section Chapter 3
Describe the design in terms of the purpose, priority and sequence of methods	Methodology section Chapter 3
Describe each method in terms of sampling, data collection and analysis	Methods section of Chapter3
Describe where integration has occurred, how it has occurred and who has participated in it	Results section of Chapter 3
Describe any limitation of one method associated with the presence of the other method	Methodology and method section Chapter 3
Describe any insights gained from mixing or integrating methods	Results and discussion section of Chapter 3

Table for medication-related comment synonyms

Word	2017	2018	2019
Medication	√	√	√
Medicine	√	√	√
Medic	√	√	√
Drug	√	√	√
Dose	√	√	√
Prescription	√	√	√
Pharm	√	√	√
Tablet	√	√	√
Capsule	√	√	√
pill	√	√	√
Chemo	√	√	√
Painkiller	√	√	√
Antibiotic	√	√	√
Treatm	√	√	√
Therap	√	√	√
Side effect	√	√	√

Approval of data analysis from the School of Pharmacy and Pharmaceutical Sciences Research Ethics committee.

Coláiste na Tríonóide, Baile Átha Cliath
Trinity College Dublin
Ollscoil Átha Cliath | The University of Dublin

Assoc. Prof. Tamasine Grimes,
School of Pharmacy and Pharmaceutical Sciences,
Trinity College Dublin,
Dublin 2.

Ref. 2021-12-01

22 February 2022

Dear Tamasine,

Re: Inpatient perceptions of medication management identified in the national patient experience survey

I am pleased to inform you that the above project now has approval from the School of Pharmacy and Pharmaceutical Sciences Research Ethics Committee.

You are reminded that any significant deviation from the research description in the application requires approval from the School of Pharmacy and Pharmaceutical Sciences Research Ethics Committee before implementation.

Please also note the reporting requirements outlined on the Committee's website (http://pharmacy.tcd.ie/research/SoPPS_REC.php), in particular the need for:

- An immediate report in writing (by email to pharmacy.ethics@tcd.ie) of any serious or unexpected adverse events on participants, or unforeseen events that might affect the benefits/risks ratio as outlined in the application.
- Annual reports (report form on the Committee's website).
- An end of project report (report form on the Committee's website).

Please quote the reference number 2021-12-01 in any further correspondence.

Yours sincerely,

S. Ryder

Sheila Ryder,
Chairperson,
School of Pharmacy and Pharmaceutical Sciences Research Ethics Committee.

Sheila Ryder
Chairperson
Research Ethics Committee
School of Pharmacy and Pharmaceutical Sciences

Panoz Building, East End 4/5,
Trinity College,
Dublin 2, Ireland.

Tel. +353 1 896 2786
E-mail pharmacy.ethics@tcd.ie
http://pharmacy.tcd.ie/research/SoPPS_REC.php

Síle Ní Mharcaigh
Cathaoirleach
Coiste um Eitic Thaighde
Scoil na Cógaisíochta agus na nEolaíochtaí Cogaisíochta

Foirgneamh Panoz, An Taobh Thoir 4/5,
Coláiste na Tríonóide,
Baile Átha Cliath 2, Éire.

Teil. +353 1 896 2786
R-phost pharmacy.ethics@tcd.ie
http://pharmacy.tcd.ie/research/SoPPS_REC.php

The data Access Request Form was accepted from the National Care Experience programme.

From: Conor Foley <cfoley@hiqa.ie>
Sent: 16 January 2020 14:35
To: Tamasine Grimes <TAGRIMES@tcd.ie>
Subject: RE: Data access request for research purposes

Hi Tamasine,

The Programme Board met this week and they were very happy to approve your data access request.

The HSE is represented on the Programme Board and they expressed a desire that you would brief the Programme Board on your findings in relation to patient experiences of medication safety, etc once the project has reached that stage. Is this something you would be interested in? I know that's likely to be quite a bit down the line.

It will take me a few days to get the data file together. I've spoken to our Data Protection Officer and she's happy for us to send the data in an encrypted Excel sheet via email. If you could please provide a mobile number I will text you the password once the file is transferred.

Kind regards,
Conor

Appendix III

The Good Reporting of a Mixed-Methods Study (GRAMMS) framework used in Chapter 4

Guideline	Section
Describe the justification for using a mixed methods approach to the research question	Methodology section Chapter 3
Describe the design in terms of the purpose, priority and sequence of methods	Methodology section Chapter 4
Describe each method in terms of sampling, data collection and analysis	Methods section of Chapter 4
Describe where integration has occurred, how it has occurred and who has participated in it	Results section of Chapter 4
Describe any limitation of one method associated with the presence of the other method	Methodology and method section Chapter 4
Describe any insights gained from mixing or integrating methods	Results and discussion section of Chapter 4

Selection of terms based on results of adding and removing synonyms.

Term	Year	Removed synonyms	Added synonyms	Results
1. Medic! OR drug OR dose OR prescription OR treatment OR therap! OR pharmac! AND Harm OR error OR "adverse reaction" OR "adverse event" OR "adverse effect" OR adherence OR compliance OR interaction OR "side effect" OR injury OR hurt OR damage OR problem AND patient OR person OR individual	One year 2019	Non	Non	9,785
2. Medic! OR drug OR dose OR prescription OR treatment OR therap! OR pharmac!		Damage	Non	8,824

	AND harm OR error OR "adverse reaction" OR "adverse event" OR "adverse effect" OR adherence OR compliance OR interaction OR "side effect" OR injury OR hurt OR problem AND patient OR person OR individual				
3.	Medic! OR drug OR prescription OR treatment OR pharmac! AND harm OR error OR "adverse reaction" OR "adverse event" OR "adverse effect" OR adherence OR compliance OR interaction OR "side effect" OR injury OR hurt AND patient OR person OR individual	One year 2019	Dose Therap! Problem	Non	4,627
4.	Medic! OR drug OR dose OR prescription OR prescribing OR treatment OR dispensing AND harm OR error OR "adverse reaction" OR "adverse event" OR "adverse effect" OR adherence OR compliance OR interaction OR "side effect" OR "overdose" OR "miss dose" OR allergy OR injury AND patient OR person OR individual		Pharmac! Hurt	Dose, Prescribing Treatment Dispensing Overdose Miss dose Allergy	4,374
5.	Medic! OR drug OR dose OR prescription OR prescribing OR treatment OR dispensing AND harm OR error OR "adverse reaction" OR "adverse event" OR "adverse effect" OR adherence OR compliance OR interaction OR "side effect" OR "overdose" OR allergy OR injury AND patient OR person OR individual		Miss dose	Non	4,374
6.	Medic! OR drug OR dose OR prescription OR prescribing OR treatment OR dispensing AND harm OR error OR "adverse reaction" OR "adverse event" OR		Overdose	Non	4,198

	"adverse effect" OR adherence OR compliance OR interaction OR "side effect" OR allergy OR injury AND patient OR person OR individual				
7.	Medic! OR drug OR pill OR dose OR prescription OR prescribing OR treatment OR dispensing AND harm OR error OR "adverse reaction" OR "adverse event" OR "adverse effect" OR adherence OR compliance OR interaction OR "side effect" OR "overdose" OR allergy OR injury OR mistake AND patient OR person OR individual			Pill Overdose Mistake	5,047
8.	Medic! OR drug OR pill OR dose OR prescription OR prescribing OR treatment OR dispensing AND harm OR error OR "adverse reaction" OR "adverse event" OR "adverse effect" OR adherence OR compliance OR interaction OR "side effect" OR "overdose" OR allergy OR injury AND patient OR person OR individual		Mistake	Pill	4,437 **The first 10 results were similar to with "mistake"**