APPENDIX A. Search strategy

1. PubMed

#1	Search (("Patient Education as Topic"[Mesh]) OR ("Education, Patient"[Title/Abstract] OR "Patient Education"[Title/Abstract] OR "Education of Patients"[Title/Abstract]))	90835
#2	Search ("Medication Alert System*"[Title/Abstract] OR "Alert System*, Medication"[Title/Abstract] OR "System*, Medication Alert"[Title/Abstract] OR (("Reminder Systems"[Mesh]) OR "Reminder System"[Title/Abstract] OR "System*, Reminder"[Title/Abstract])	3345
#3	Search ((((("Decision Support Systems, Clinical"[Mesh]) OR "Clinical Decision Support*" OR "Decision Support*, Clinical" OR "Support*, Clinical Decision"))) OR (((("Technique*, Decision Support"[Title/Abstract] OR "Decision Support Technic*"[Title/Abstract] OR "Decision Analyse*" OR "Decision Modeling"[Title/Abstract] OR "Clinical Prediction Rule*"[Title/Abstract] OR "Prediction Rule*, Clinical"[Title/Abstract] OR "Rule*, Clinical Prediction"[Title/Abstract] OR "Decision Analysis*") OR ("Decision Support Techniques"[Mesh]))))	137442
#4	Search (("Decision Aid*"[Title/Abstract] OR "Aid*, Decision"[Title/Abstract]) OR "Decision Support Techniques"[Mesh])	73256
#5	Search (((((("Participation, Patient"[Title/Abstract] OR "Patient Involvement"[Title/Abstract] OR "Involvement, Patient"[Title/Abstract] OR "Patient Empowerment"[Title/Abstract] OR "Empowerment, Patient"[Title/Abstract] OR "Patient Participation Rate"[Title/Abstract] OR "Patient Activation"[Title/Abstract] OR "Activation, Patient"[Title/Abstract] OR "Patient Engagement"[Title/Abstract] OR "Engagement, Patient"[Title/Abstract])) OR "Patient Participation"[MeSH Terms])))	27202
#6	Search ("Self Care"[Title/Abstract] OR "Care, Self"[Title/Abstract] OR "Self-Care"[Title/Abstract] OR "Self-Management" OR "Self Management"[Title/Abstract]) OR (Disease Management[MeSH Terms])	90081
#7	Search (("Disease Management"[Title/Abstract] OR "Disease Manage*"[Title/Abstract] OR "Manage*, Disease"[Title/Abstract]))	13277
#8	Search ((((kidney transplantation[MeSH Terms]) OR ("Renal Transplant*"[Title/Abstract] OR "Transplant*, Renal"[Title/Abstract] OR "Grafting, Kidney"[Title/Abstract] OR "Kidney Grafting"[Title/Abstract] OR "Transplant*, Kidney"[Title/Abstract] OR "Kidney Transplant*"[Title/Abstract]))	97902
#9	#7 OR #6 OR #5 OR #4 OR #3 OR #2 OR #1	339991
#10	#9 AND #8	1186
#11	Filters: English	1081

2. Scopus

(TITLE-ABS-KEY (("Medication Alert System" OR "Medication Alert")) OR TITLE-ABS-KEY ("Reminder Systems" OR "Reminder") OR TITLE-ABS-KEY ("Decision Support Systems, Clinical" OR "Clinical Decision Support" OR "Support, Clinical Decision") OR TITLE-ABS-KEY ("Decision Support Techniques" OR "Technique, Decision Support" OR "Decision Support Technic" OR "Decision Analysis" OR "Decision Modeling" OR "Clinical Prediction Rule" OR "Prediction Rule, Clinical" OR "Rule, Clinical Prediction" OR "Decision Analysis") OR TITLE-ABS-KEY ("Telemedicine" OR "Mobile Health" OR "mHealth" OR "Telehealth") OR TITLE-ABS-KEY ("self care" OR "self management" OR "self-administrated") OR TITLE-ABS-KEY ("Disease Management" OR "Management Disease") OR TITLE-ABS-KEY ("Aid Decision" OR "Decision Aid") OR TITLE-ABS-KEY ("Patient Participation" OR "Patient Involvement" OR "Involvement Patient" OR "Patient Empowerment" OR "Empowerment Patient" OR "Patient Participation" OR "Patient Activation" OR "Activation Patient" OR "Patient Engagement") OR TITLE-ABS-KEY ("Patient Education as Topic" OR "Education,Patient" OR "Patient Education" OR "Education of Patients") AND TITLE-ABS-KEY ("Kidney Transplantation" OR "Renal Transplantation" OR "Transplantations Renal" OR "Kidney Grafting")) AND ORIG-LOAD-DATE AFT 20180922 AND (EXCLUDE (SUBJAREA , "CENG") OR EXCLUDE (SUBJAREA , "AGRI") OR EXCLUDE (SUBJAREA , "ARTS") OR EXCLUDE (SUBJAREA , "VETE") OR EXCLUDE (SUBJAREA , "CHEM") OR EXCLUDE (SUBJAREA , "EART") OR EXCLUDE (SUBJAREA , "ECON") OR EXCLUDE (SUBJAREA , "PHYS")) AND (EXCLUDE (DOCTYPE , "cp") OR EXCLUDE (DOCTYPE , "ed") OR EXCLUDE (DOCTYPE , "no") OR EXCLUDE (DOCTYPE , "le") OR EXCLUDE (DOCTYPE , "ch")) AND (EXCLUDE (LANGUAGE , "French") OR EXCLUDE (LANGUAGE , "German") OR EXCLUDE (LANGUAGE , "Spanish") OR EXCLUDE (LANGUAGE , "Chinese") OR EXCLUDE (LANGUAGE , "Italian") OR EXCLUDE (LANGUAGE , "Japanese") OR EXCLUDE (LANGUAGE , "Portuguese") OR EXCLUDE (LANGUAGE , "Dutch") OR EXCLUDE (LANGUAGE , "Croatian") OR EXCLUDE (LANGUAGE , "Polish") OR EXCLUDE (LANGUAGE , "Turkish") OR EXCLUDE (LANGUAGE , "Czech") OR EXCLUDE (LANGUAGE , "Danish") OR EXCLUDE (LANGUAGE , "Korean") OR EXCLUDE (LANGUAGE , "Norwegian") OR EXCLUDE (LANGUAGE , "Serbian") OR EXCLUDE (LANGUAGE , "Slovak") OR EXCLUDE (LANGUAGE , "Swedish"))	1161

APPENDIX B.

Supplementary Table 1. Risk of bias of individual RCT studies.

Cochrane Collaboration's evaluation tool was used to assess the quality of clinical trials

	Christina Freier *et al.* , 2010	Kullgren KA *et al.* , 2015	Bethany J. Foster *et al.* , 2018
Random Sequence Generation	Unclear risk	Unclear risk	Low risk
Allocation Concealment	Unclear risk	Unclear risk	Low risk
Blinding Participants And Personnel	Unclear risk	High risk	High risk
Blinding Outcome Assessor	Unclear risk	Unclear risk	Low risk
Incomplete Outcomes Data	Low risk	Unclear risk	Low risk
Selective Outcomes Reporting	Low risk	Low risk	Low risk
Other Bias	Unclear risk	Unclear risk	Unclear risk

Supplementary Table 2. Risk of bias of quasi-experimental studies.

Quality Assessment Tool for Pre and Post Intervention Designs (Brown et al 2014)

Criterion	Malone et al. , 2016	David K. Hooper et al. , 2012
1. Sampling (2 points)		
a. Was probability sampling used? (1 point)	No	No
b. Was sample size justified to obtain power? (1 point)	No	No
2. Design (2 points)		
a. One pre-test or baseline and several post-test measures (2 points) **OR**	-	Yes
b. Simple before-and-after study (1 point)	Yes	-
3. Control of confounders (2 points)		
Does the study employ a comparison strategy? An attempt to create or assess equivalence of groups at baseline by:		
a. Matching group participants (2 points) **OR**	No	No
b. Statistical control (1 point) **OR**	-	-
c. None (0 point)	-	-
4. Data collection and Outcome measurement (5 points)		
a. Was the dependent variable directly measured by an assessor? (1 point)	Yes	Yes

b.   Were dependent variables either:
    i.   Directly measured (2 points) **OR**
    ii.   Self-reported (1 point)
	Yes (Directly measured)	Yes (Directly measured)

c. Were dependent variables measured reliably (with reliability indices previously or for this study)? (1 point)	N/A	N/A
d. Were dependent variables measured validly (with validity assessments previously or for this study)? (1 point)	N/A	N/A
5. Statistical analysis and Conclusions (4 points)		
a. Was (were) the statistical test(s) used appropriate for the main outcome and at least 80% of the others (1 point)	Yes	Yes
b. Were p values and confidence intervals reported properly? (1 point)	No	Yes
c. If multiple outcomes were studied, were correlations analyzed? (1 point)	N/A	Yes
d. Were missing data managed appropriately? (1 point)	N/A	N/A
6. Drop outs (1 point)		
a. Is attrition rate <30% (if no attrition code1) (1 point)	Yes	Yes
Total Score	**0.5**	**0.69**
Rank	**Weak**	**Moderate**

Note: Total score calculation (total number of points obtained ÷ 16 – N/A). N/A = not applicable. Highest possible number of points that can be obtained is 16. Articles and papers with a score of 0.80 or higher were rated strong, a score between 0.61-0.79 as moderate, and a score of 0.60 or less as weak. *Included as it was the only paper that reported outcomes at the systems level.