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Does the duration of ambulatory consultations affect the quality of healthcare? A systematic review

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ABSTRACT

Background The objective is to examine and synthesise the best available experimental evidence about the effect of ambulatory consultation duration on quality of healthcare.

Methods We included experimental studies manipulating the length of outpatient clinical encounters between adult patients and clinicians (ie, therapists, pharmacists, nurses, physicians) to determine their effect on quality of care (ie, effectiveness, efficiency, timeliness, safety, equity, patient-centredness and patient satisfaction).

Information sources Using controlled vocabulary and keywords, without restriction by language or year of publication, we searched MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials and Database of Systematic Reviews and Scopus from inception until 15 May 2023.

Risk of bias Cochrane Risk of Bias instrument.

Data synthesis Narrative synthesis.

Results 11 publications of 10 studies explored the relationship between encounter duration and quality. Most took place in the UK's general practice over two decades ago. Study findings based on very sparse and outdated evidence—which suggested that longer consultations improved indicators of patient-centred care, education about prevention and clinical referrals; and that consultation duration was inconsistently related to patient satisfaction and clinical outcomes—warrant low confidence due to limited protections against bias and indirect applicability to current practice.

Conclusion Experimental evidence for a minimal or optimal duration of an outpatient consultation is sparse and outdated. To develop evidence-based policies and practices about encounter length, randomised trials of different consultation lengths—in person and virtually, and with electronic health records—are needed.

Trial registration number OSF Registration DOI:10.17605/OSF.IO/EUDK8.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Time is often noted as a barrier to improving the quality of care. The effect of ambulatory visit length of quality-of-care domains remains unclear.

WHAT THIS STUDY ADDS

⇒ The body of experimental evidence about the effect of the duration of ambulatory consultations on care quality warrants very low confidence because the few extant studies were relatively unprotected against bias, and their results are inconsistent, small and imprecise. Also, this body of evidence—mostly studies conducted in the UK over 30 years ago—indirectly applies to today's ambulatory care.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Policymakers seeking to optimise efficiency and value by optimally investing clinical encounter time cannot base decisions about encounter duration on trustworthy evidence.

⇒ Research using both experimental designs and in-depth observational methods, taking advantage of routinely collected data, across the range of consultations modalities (eg, face to face, remote) and contexts (e.g., new diagnosis or complication, problem solving in multimorbidity) and measuring intended and unintended consequences of visit duration on quality of care are needed.

BACKGROUND

In ambulatory clinical encounters, clinicians and patients consider the patient's problematic situation and develop a plan of care.[1] Time is often noted as a barrier to improve the quality of care.[2 3] And yet, the duration of ambulatory clinical encounters to optimise access and quality of care remains unclear.[4–8]

Almost 30 years ago, Wilson et al. published the first systematic review about the effect of ambulatory encounter duration on quality of care.[9] They found evidence, mostly developed in the late 1970s in the UK, that longer visits were associated with better care experience and outcomes. That evidence compared visit durations—by which long visits lasted much less than 15 min—in an era when patients were most likely to seek care for one acute concern, could access very limited medical information on their own, electronic

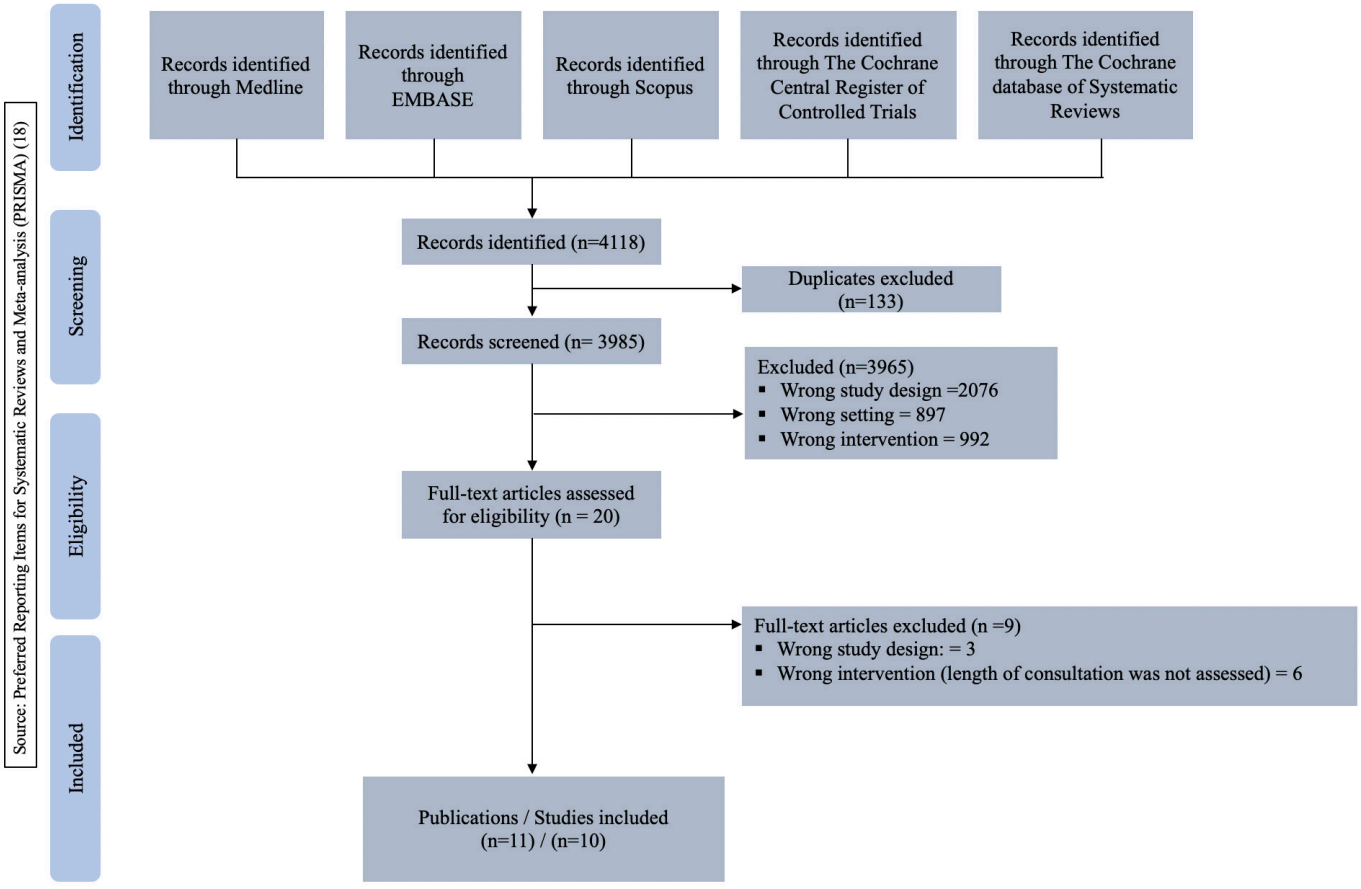

Figure 1 Flow diagram.

health records were not part of the consultation, clinicians had a limited range of tests and treatments to order and prescribe and documentation played minimal or no role in quality assurance or billing. Secular trends show that consultations are becoming longer in the developed world. Estimates from the USA, for example, suggest that the average consultation length increases by 12 s every year, with average consultations lasting between 15 and 25 min.[10] This makes the sparse evidence available, confirmed in a Cochrane review published in 2016,[11] hardly applicable to the ambulatory care of adult patients today, many of whom present to clinical encounters with chronic multimorbidity and psychosocial complexity.

Causally linking encounter duration to quality of care is not straightforward. Characteristics of patients, clinicians and healthcare systems associated with longer encounters may also be associated to quality of care, confounding the observational evidence of their association.[3 11–14] Also complicating the observational analysis is the simultaneous expansion in the number and complexity of clinical and administrative tasks expected to be completed during consultations. Their completion leaves less time to listen and appreciate the patient's situation and to co-create plans of care that make intellectual, emotional and practical sense to the patient. Without time, hurried and harried consultations may be more likely to produce generic, burdensome, ineffective, unsafe and unaffordable treatments that may contribute to overwhelmed patients, burned out clinicians and low-quality care.[15] Thus, to reliably estimate the association between the duration of ambulatory visits and quality of care, we must rely on controlled experimental evidence.

Hence, this review aims to contribute to address the question, how much consultation time should be allotted to enable the care of adult patients in the ambulatory setting? In particular, this review sought to examine and synthesise the best available experimental evidence about the effect of ambulatory consultation duration on quality of care.

METHODS

Study design

We designed this systematic review based on Cochrane guidelines for the development of systematic reviews and registered the review protocol (OSF Registration DOI: 10.17605/OSF.IO/EUDK8). This report is in adherence to the Preferred Reporting Items for Systematic reviews and Meta-Analyses 2020 statement.[16]

Search strategy and data sources

An experienced librarian (LJP) designed and executed a search strategy with input from the study's principal investigator (VMM). This strategy

Table 1 Characteristics of included studies

Author	Year	Setting	Randomised trial	N	Age	Intervention
Thomas[24]	1978	Primary care, UK	Yes	200	Not reported	Brief (3–7 min) vs long (~10 min)
Morrell *et al*[20]	1986	Primary care, UK	No	780	Not reported	5 vs 7.5 vs 10 min
Roland *et al*[22]	1986	Primary care, UK	No	623	Not reported	
Ridsdale *et al*[21]	1989	Primary care, UK	No	914	Women >16	5 vs 10 vs 15 min
Wilson *et al*[25 26]	1991–1992	Primary care, UK	No	4471	36.5 (range 27–56)	Control (5–7.5) vs 10 min
Edwards *et al*[19]	2004	Primary care, UK	Yes	747	59 (SD 11.2)	<15 vs >15 min
Mercer *et al*[27]	2016	Primary care, UK	Yes	152	52 (SD 9.6)	Usual care (<30) vs 30–45 min
Sohn *et al*[23]	2019	Internal medicine, South Korea	No	174	Not reported	Usual care (not reported) vs 15 min
Bonney *et al*[28]	2022	Primary care, Australia	Yes	774	>65 (60%)	<15 vs >15 min
Reed *et al*[29]	2022	Primary care, Australia	Yes	1044	65 (SD 19.3)	<20 vs >20 min

involved searching multiple databases from their inception until 15 May 2023. The databases searched were Ovid MEDLINE(R) and Epub Ahead of Print; In-Process & Other Non-Indexed Citations, and Daily; Ovid EMBASE; Ovid Cochrane Central Register of Controlled Trials; Ovid Cochrane Database of Systematic Reviews; and Scopus. The strategy used controlled vocabulary, supplemented with keywords (online supplemental file 1).

Study selection

Eligible studies experimentally manipulated the length of ambulatory clinical encounters between adult patients and clinicians (ie, therapists, pharmacists, nurses, physicians) to determine its effect on measures of quality of care, regardless of language or date of publication. We excluded studies of simulated encounters, and studies in which most of the encounters considered were with paediatric patients, or in emergency departments or urgent care centres. Although considered in our protocol, for reasons discussed above, we ultimately excluded observational studies in which investigators estimated the correlation between encounter duration and measures of quality of care whether in usual care or within evaluations of an unrelated practice change or experimental intervention (e.g., implementation of a shared decision-making tool). We also excluded studies that manipulated other 'times' such as the time needed to get an appointment scheduled, travel time to an appointment or time spent waiting for the encounter to start.

Pairs of reviewers worked independently and in duplicate, and after calibration, to assess study eligibility in two phases (title and abstracts followed by full-text assessments). All citations retrieved were imported into bibliographic references software Rayyan.

Data extraction and study quality assessment

Details of the study design, population, length of consultation and quality-of-care were extracted independently by two reviewers using a standardised form.

Quality of care outcomes included effectiveness (including measures of health outcomes), safety, equity, patient-centredness, efficiency (avoiding unnecessary tests or referrals, patient returns with same problem) and timeliness.[17]

Two reviewers independently assessed the validity of the included studies using the Risk of Bias 2 Cochrane instrument.[18]

Data synthesis

The paucity and heterogeneity of included studies precluded the planned quantitative synthesis. Instead, we summarised this evidence narratively.

RESULTS

Figure 1 describes the flow of studies through our systematic search and selection process. This process identified 10 eligible studies reported in 11 publications comprising 9879 participants.[19–29] Table 1 describes the study characteristics. Only three studies were conducted outside the UK[23 28 29] and only four[23 27–29] were published in the last decade. Aside from age and sex, other sociodemographic participant characteristics were not reported. Except for the study by Sohn *et al*,[23] conducted in internal medicine (we did not consider data they reported from paediatrics or emergency care), all other studies were conducted in general practice. The four studies conducted in the last decade evaluated complex interventions (e.g., economic incentives or arrangements to ensure continuity of care and prompt review after a hospitalisation), with longer visits as one component. Encounters were allocated to different consultation lengths ranging from 3 to 45 min.

Table 2 Risk of bias of included studies

Author	Year	Risk of bias arising from the randomisation process including allocation concealment	Risk of bias due to deviations from the intended interventions	Missing outcome data	Risk of bias in measurement of the outcome	Risk of bias in selection of the reported result	Overall risk of bias
Thomas[24]	1978	?	?	+	+	+	?
Morrell *et al*[20]	1986	−	?	+	−	+	−
Roland *et al*[22]	1986	−	+	+	?	+	−
Ridsdale *et al*[21]	1989	−	+	+	+	+	−
Wilson *et al*[25 26]	1991–1992	−	+	−	?	+	−
Edwards *et al*[19]	2004	+	?	+	+	+	?
Mercer *et al*[27]	2016	?	?	+	+	+	?
Sohn *et al*[23]	2019	−	?	?	?	+	−
Reed *et al*[29]	2022	+	?	+	?	?	?
Bonney *et al*[28]	2022	+	?	+	+	+	?

Ages are reported using means and SD, median and range, proportion in age category or eligible age range. The information about visit time targets for Reed *et al* was kindly provided by the authors.

The main threats to the validity (risk of bias) of the included studies arose from the allocation of encounters to different encounter lengths—three studies reported using random allocation, and all had no or unclear methods to conceal the allocation sequence—and from lack of blinding of participants and outcomes assessors (table 2).

Encounter duration and quality of care

Table 3 describes the effect of encounter duration on measures of quality of care. No study reported on the effect of encounter duration on safety, equity or timeliness. Longer consultations led in some studies to better patient and clinician satisfaction with the encounters and improvements in some but not all measured outcomes related to efficiency, effectiveness and patient-centredness, with assessments on other outcomes finding either no significant benefits or inconsistent effects across time-defined groups within the same study.

DISCUSSION

The body of experimental evidence about the effect of the duration of ambulatory consultations on care quality warrants very low confidence because the few extant studies were relatively unprotected against bias, and their results are inconsistent, small and imprecise. Also, this body of evidence—mostly studies conducted in the UK ≥20 years ago—indirectly applies to today's ambulatory care. Thus, at a time in which healthcare systems are focused on efficiency and value and are interested in optimally investing time, the research evidence about this most important resource for care cannot be trusted to offer reliable estimates of the effect of lengthening or abbreviating ambulatory encounters on the quality of care.

Limitations of this review

Although we included four additional studies,[23 27–29] our results are concordant with the Cochrane review

Table 3 Length of ambulatory encounters and quality of care

Outcome	Improved with longer visits*	No or inconsistent effect
Patient-reported outcomes	► General satisfaction.[23] ► Satisfaction with time available.[21 23]	Satisfaction with: ► Risk communication.[19] ► Satisfaction with time available.[20] ► Information received.[21 29] ► Feeling free to discuss problems, ideas and concerns.[20 21]
Clinician-reported outcomes	► Satisfaction with explanations about disease.[23] ► Satisfaction with time available.[21] ► Feeling more arousal and less stress.[25]	► Feeling stressed.[20]
Efficiency	► Education about health promotion and prevention.[22 26] ► Recording of blood pressure.[26]	► Problems recorded.[21] ► Organ-systems examined.[21] ► Medicines prescribed.[20 21] ► Referrals.[20 29] ► Return visits.[20 21 24] ► Emergency visits and hospita admissions.[29]
Effectiveness	► Expectation to adhere treatment.[19] ► Cost-effectiveness.[27]	► Quality of life.[19 28 29] ► Anxiety.[19] ► Cost-effectiveness.[29]
Patient-centredness	Clinicians: ► Establish rapport with patients, were respectful, listened carefully, spent enough time, treated patients fairly, avoided embarrassment, made patients feel comfortable about unsatisfying aspect of care and participating in decisions.[23] ► Engage in social exchange.[21] ► Provide facilitation statements.[22] ► Ask more questions in general, more psychosocial questions.[22] ► Explain problem and management.[22] Patients: ► Ask more questions.[21] ► Offer ideas about the condition.[22] ► Answer questions.[22] ► Understand clinician's explanations.[23] ► Report greater confidence in decision-making.[19]	Clinicians: ► Engage in social exchange.[22] ► Interrupt patients.[22] Patients: ► Engage in social exchange.[21 22] ► Ask questions.[21 22] ► Offer more concerns about the condition.[21 22] ► Report more enablement and support.[19] ► Health literacy support.[29] ► Access, coordination, comprehensiveness and continuity of care.[28]

*Although statistically significant, these findings warrant low trustworthiness because the interventions tested (the range of visit duration) and the clinical settings in which they were tested render the results indirectly applicable to current healthcare, and because the experimental methods used offer limited protection against bias.

published in 2016.[11] Because this Cochrane review already offered quantitative summaries that represent 60% of the studies and 80% of the encounters summarised here and because, in our judgement, the updated results are insufficiently reliable or applicable, we decided to not present the data quantitatively or to conduct meta-analyses. Of note, our work in line with the summary of findings of the Cochrane review,[11] report in all cases the trustworthiness of this evidence as very low.

Implications for practice and research

A study of the average length of primary care consultations across 67 countries found a range from 48 s in Bangladesh to 22.5 min in Sweden.[10] In the absence of reliable evidence linking encounter duration to markers of care quality, this large variation in visit duration across countries can only reflect each system's choice to allocate time to optimise patient access to care or to improve revenue related to number of visits per unit of time.[5] At the health system level, this range raises issues of equity but also of value in healthcare. Are encounters that are too long wasteful of time, the most precious resource for care? Are encounters that are too brief to meaningfully notice and respond to a patient's problematic situation cruelly wasteful in that they offer access and apparent efficiency without the possibility of effectiveness? At the very brief end of encounter duration,

clinicians who experience moral injury being unable to care for the people before them may demand more time, as would patients who find their agenda setting overtures truncated within 11 s.[10 30] Unfortunately, care advocates will find limited evidence to support both minimum and optimum visit durations, except for their own observation that caring well takes time.[7]

Rigorous experimental studies are needed to assess the extent to which manipulating consultation time can feasibly improve the quality of care, including patient and clinician satisfaction, timely access, safety and outcomes.[31] Clustered randomised trials and interrupted time-series designs may be appropriate methods to reliably estimate the effect of different encounter durations on measures of quality and partially blind encounter participants and outcome assessors to trial hypotheses. These designs can be large enough to enable the efficient study of interactions between visit factors and the duration-quality link.

Routinely collected measures of patient experience and outcomes, supplemented by clinician-reported measures and healthcare record review could enable large scale studies at low cost.[7 32] In-depth analyses of a random sample of clinical encounters, including audiovisual recording of the encounters with or without video-reflexive ethnography,[32] could further enrich the body of evidence with qualitative insights.[33 34]

These trials should evaluate minimal and optimal durations given the extent of continuity of care, asynchronous (e.g., messaging via text or through medical record portals) communication, remote consultations (especially relevant during COVID-19 pandemic) and visit intervals.[3 35 36] The finding that about 40% of the consultation is spent working with the electronic health record and that, increasingly, the encounter is about meeting guideline-directed care rather than responding to the patient's agenda, may require that research focus not only on the scheduled or the actual encounter durations, but also on the time spent caring for each patient.[37] This is particularly important in the care of patients with multimorbidity, particularly mental health comorbidity, trauma and contextual complexity.[33 38–42] Visits of appropriate length may reduce disparities of care across gender, race and ethnicity, language and other causes of discrimination and bias.[13 43 44]

Studies should explore interactions between visit factors and the association between encounter duration and quality of care. Some examples of these factors are patient (sex, race, ethnicity and migratory status, frailty, multimorbidity, polypharmacy), clinician (sex, race, ethnicity), type of clinician (e.g., physician, advance practice nurse, nurse, therapist, pharmacist), country of training, specialty, years of experience, training in patient–clinician communication) and encounter characteristics (planned or unplanned; diagnostic, therapeutic or prognostic; primary care or specialty care; consultation vs ongoing care, with or without continuity of care; electronic health record use; participation of interpreters or learners; face-to-face vs remote; with or without asynchronous communication). These factors interact in complicated ways with encounter duration and measures of care quality.[2] For example, some authors reported that compared with encounters with male physicians, encounters with female physicians tend to be longer as patients bring up more psychosocial concerns, which likely enables more responsive visits.[45 46] Visits with black patients with psychiatric concerns tend to be 4.4 min shorter than similar visits with white patients,[13] likely introducing disparities in health outcomes.

Financial, equity, safety and access trade-offs need to be estimated if longer visits prove necessary to improve healthcare quality. This line of research may find that accelerating the practice—rather than increasing the number of available clinicians and supporting continuity of care, for example—may give people more access to care but in a form that fails to notice and respond well to their problematic situation. Simply lengthening clinical encounters may reduce access, be wasteful and, when implemented reactively, may translate into longer work days, extended patient wait times and staff dissatisfaction.[47] On the other hand, improvements in the quality of care brought about within unhurried (not longer) consultations may reduce subsequent healthcare demand and, therefore, improve access to care.[47–49]

CONCLUSION

In conclusion, the evidence for the minimal or optimal duration of an ambulatory consultation is sparse, at risk of bias and, at best, of indirect applicability. Without research into the relationship between duration of consultations and measures of quality of care, further erosion in the time available to care will remain motivated by resource allocation formulae that cannot fully account for how accelerating care may affect its quality.

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Ovid

Database(s): EBM Reviews - Cochrane Central Register of Controlled Trials May 2021, EBM Reviews - Cochrane Database of Systematic Reviews 2005 to June 16, 2021, Embase 1974 to 2021 June 22 , Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations and Daily 1946 to June 22, 2021

Search Strategy:

#	Searches	Results
1	(("ambulatory visit" or "ambulatory visits" or appointment* or consultation or consultations or encounter or encounters or "Office visit" or "office visits" or "outpatient visit" or "outpatient visits") adj5 (duration or interval* or length or lengthen or lengths or longer or minutes or shorte* or time or times)).ti,ab,kw.	29010
2	exp Physicians/	966050
3	Primary Health Care/	156358
4	general practice/	94059
5	family practice/	144270
6	(Allergist* or Anaesthesiologist* or Andrologist* or Anesthesiologist* or cardiologist* or clinician* or dermatologist* or doctor* or endocrinologist* or "family practice" or feldsher* or gastroenterologist* or gastrologist* or "general practice" or Geneticist* or geriatrician* or gerontologist* or Gynecologist* or Hematologist* or Hepatologist* or hospitalist* or Immunologist* or Internist* or "local health authority" or nephrologist* or neurologist* or Neurophysiologist* or neurosurgeon* or obstetrician* or oncologist* or Ophthalmologist* or Orthopedist* or otolaryngologist* or physician* or Physiologist* or podiatrist* or practitioner* or "primary care" or "primary health care" or provider* or Psychiatrist* or Pulmonologist* or radiologist* or rheumatologist* or Specialist* or surgeon* or "surgical special*" or urologist*).ti,ab,kw.	3956678
7	or/2-6	4288564
8	1 and 7	17107
9	exp Patient Safety/	160095
10	"Quality of Health Care"/	281199
11	Quality Indicators, Health Care/	209468
12	exp Quality Assurance, Health Care/	3816522
13	exp Health Equity/	6627
14	exp Healthcare Disparities/ or exp Health Status Disparities/	74047
15	exp Patient Satisfaction/	253810
16	(((patient or patients) adj3 (safety or error* or "adverse event*" or experience* or enabl*)) or (patient* adj3 satisf*) or (quality adj5 (care or healthcare)) or confidence or Disparit* or effectiveness or efficiency or equit* or inequit* or "patient-centeredness" or safety or timeliness or trust or value).ti,ab,kw.	8140296
17	or/9-16	11154331
18	8 and 17	9720

19	limit 18 to ("all adult (19 plus years)" or "young adult (19 to 24 years)" or "adult (19 to 44 years)" or "young adult and adult (19-24 and 19-44)" or "middle age (45 to 64 years)" or "middle aged (45 plus years)" or "all aged (65 and over)" or "aged (80 and over)") [Limit not valid in CCTR,CDSR,Embase; records were retained]	8242
20	limit 19 to (adult <18 to 64 years> or aged <65+ years>) [Limit not valid in CCTR,CDSR,Ovid MEDLINE(R),Ovid MEDLINE(R) Daily Update,Ovid MEDLINE(R) PubMed not MEDLINE,Ovid MEDLINE(R) In-Process,Ovid MEDLINE(R) Publisher; records were retained]	5414
21	limit 18 to ("all infant (birth to 23 months)" or "all child (0 to 18 years)" or "newborn infant (birth to 1 month)" or "infant (1 to 23 months)" or "preschool child (2 to 5 years)" or "child (6 to 12 years)" or "adolescent (13 to 18 years)") [Limit not valid in CCTR,CDSR,Embase; records were retained]	7417
22	limit 21 to (embryo or infant or child or preschool child <1 to 6 years> or school child <7 to 12 years> or adolescent <13 to 17 years>) [Limit not valid in CCTR,CDSR,Ovid MEDLINE(R),Ovid MEDLINE(R) Daily Update,Ovid MEDLINE(R) PubMed not MEDLINE,Ovid MEDLINE(R) In-Process,Ovid MEDLINE(R) Publisher; records were retained]	2000
23	22 not 20	517
24	18 not 23	9203
25	exp meta analysis/	354853
26	exp Meta-Analysis as Topic/	68628
27	exp "systematic review"/	460472
28	exp controlled study/	8405983
29	exp Randomized Controlled Trial/	1200088
30	"Randomised controlled trials".sd.	241062
31	exp triple blind procedure/	291
32	exp Double-Blind Method/	492561
33	exp Single-Blind Method/	95245
34	exp latin square design/	391
35	exp Placebos/	430797
36	exp Placebo Effect/	13145
37	exp comparative study/	3377314
38	exp intervention studies/	50864
39	exp Cross-Sectional Studies/	795537
40	exp Cohort Studies/	3034259
41	exp longitudinal study/	449334
42	exp retrospective study/	2013832
43	exp prospective study/	1369717
44	exp observational study/	339044
45	exp clinical trial/	2502641

46	clinical study/	159738
47	exp Evaluation Studies/	334402
48	exp Evaluation Studies as Topic/	1275924
49	exp quantitative study/	39398
50	exp validation studies/	196224
51	exp Pilot Projects/	321181
52	exp pilot study/	321181
53	exp Feasibility Studies/	229535
54	exp correlational study/	49151
55	exp case-control studies/	1395687
56	exp confidence interval/	171961
57	exp regression analysis/	922316
58	exp multivariate analysis/	577413
59	odds ratio/	116824
60	((meta adj analys*) or metaanalys* or (systematic* adj3 review*) or (control* adj3 study) or (control* adj3 trial) or (randomized adj3 study) or (randomized adj3 trial) or (randomised adj3 study) or (randomised adj3 trial) or "pragmatic clinical trial" or (random* adj1 allocat*) or (doubl* adj blind*) or (doubl* adj mask*) or (singl* adj blind*) or (singl* adj mask*) or (tripl* adj blind*) or (tripl* adj mask*) or (trebl* adj blind*) or (trebl* adj mask*) or "latin square" or placebo* or nocebo* or multivariate or "comparative study" or "comparative survey" or "comparative analysis" or (intervention* adj2 study) or (intervention* adj2 trial) or "cross-sectional study" or "cross-sectional analysis" or "cross-sectional survey" or "cross-sectional design" or "prevalence study" or "prevalence analysis" or "prevalence survey" or "disease frequency study" or "disease frequency analysis" or "disease frequency survey" or cohort* or "longitudinal study" or "longitudinal survey" or "longitudinal analysis" or "longitudinal evaluation" or longitudinal* or ((retrospective or "ex post facto") adj3 (study or survey or analysis or design)) or retrospectiv* or "prospective study" or "prospective survey" or "prospective analysis" or prospectiv* or (("follow-up" or followup) adj (stud* or survey or analysis)) or ((observation or observational) adj (study or survey or analysis)) or "clinical study" or "clinical trial" or (("phase 0" or "phase 1" or "phase I" or "phase 2" or "phase II" or "phase 3" or "phase III" or "phase 4" or "phase IV") adj5 (trial or study)) or "evaluation study" or "evaluation survey" or "evaluation analysis" or "quantitative study" or "quantitative analys*" or "numerical study" or "validation study" or "validation survey" or "validation analysis" or "pilot study" or "pilot survey" or "pilot analysis" or "pilot project" or ((correlation* adj2 study) or (correlation* adj2 analys*)) or "case control study" or "case base study" or "case referrent study" or "case referent study" or "case referent study" or "case compeer study" or "case comparison study" or "matched case control" or "multicenter study" or "multi-center study" or "odds ratio" or "confidence interval" or "regression analysis" or "least square" or "least squares" or ((study or trial or random* or control*) and compar*) or "before and after" or "time motion" or "time and	26503572

	motion" or (qualitative adj (study or survey or analysis))).mp,pt.	
61	or/25-60	27485645
62	24 and 61	7108
63	limit 62 to (conference abstract or editorial or erratum or note or addresses or autobiography or bibliography or biography or blogs or comment or dictionary or directory or interactive tutorial or interview or lectures or legal cases or legislation or news or newspaper article or overall or patient education handout or periodical index or portraits or published erratum or video-audio media or webcasts) [Limit not valid in CCTR,CDSR,Embase,Ovid MEDLINE(R),Ovid MEDLINE(R) Daily Update,Ovid MEDLINE(R) PubMed not MEDLINE,Ovid MEDLINE(R) In-Process,Ovid MEDLINE(R) Publisher; records were retained]	1549
64	from 63 keep 1-7	7
65	(62 not 63) or 64	5566
66	remove duplicates from 65	3709

Scopus

1	TITLE-ABS-KEY(("ambulatory visit" or "ambulatory visits" or appointment* or consultation or consultations or encounter or encounters or "Office visit" or "office visits" or "outpatient visit" or "outpatient visits") W/5 (duration or interval* or length or lengthen or lengths or longer or minutes or shorte* or time or times))
2	TITLE-ABS-KEY(Allergist* OR Anaesthesiologist* OR Andrologist* OR Anesthesiologist* OR cardiologist* OR clinician* OR dermatologist* OR doctor* OR endocrinologist* OR "family practice" OR feldsher* OR gastroenterologist* OR gastrologist* OR "general practice" OR Geneticist* OR geriatrician* OR gerontologist* OR Gynecologist* OR Hematologist* OR Hepatologist* OR hospitalist* OR Immunologist* OR Internist* OR "local health authority" OR nephrologist* OR neurologist* OR Neurophysiologist* OR neurosurgeon* OR obstetrician* OR oncologist* OR Ophthalmologist* OR Orthopedist* OR otolaryngologist* OR physician* OR Physiologist* OR podiatrist* OR practitioner* OR "primary care" OR "primary health care" OR provider* OR Psychiatrist* OR Pulmonologist* OR radiologist* OR rheumatologist* OR Specialist* OR surgeon* OR "surgical special*" OR urologist*)
3	TITLE-ABS-KEY(((patient or patients) W/3 (safety or error* or "adverse event*" or experience* or enabl*)) OR (patient* W/3 satisf*) OR (quality W/5 (care or healthcare)) OR confidence OR Disparit* OR effectiveness OR efficiency OR equit* OR inequit* OR "patient-centeredness" OR safety OR timeliness OR trust OR value)
4	TITLE-ABS-KEY((meta W/1 analys*) OR metaanalys* OR (systematic* W/3 review*) OR (control* W/3 study) OR (control* W/3 trial) OR (randomized W/3 study) OR (randomized W/3 trial) OR (randomised W/3 study) OR (randomised W/3 trial) OR "pragmatic clinical trial" OR (random* W/1 allocat*) OR (doubl* W/1 blind*) OR (doubl* W/1 mask*) OR (singl* W/1 blind*) OR (singl* W/1 mask*) OR (tripl* W/1 blind*) OR (tripl* W/1 mask*) OR (trebl* W/1 blind*) OR (trebl* W/1 mask*) OR "latin square" OR placebo* OR nocebo* OR multivariate OR "comparative study" OR "comparative survey" OR "comparative analysis" OR (intervention* W/2 study) OR (intervention* W/2 trial) OR "cross-sectional study" OR "cross-sectional analysis" OR "cross-sectional survey" OR "cross-sectional design" OR "prevalence study" OR "prevalence analysis" OR "prevalence survey" OR "disease frequency study" OR "disease frequency analysis" OR "disease frequency survey" OR cohort* OR "longitudinal study" OR "longitudinal survey" OR "longitudinal analysis" OR "longitudinal evaluation" OR longitudinal* OR ((retrospective OR "ex post facto") W/3 (study OR survey OR analysis OR design)) OR retrospectiv* OR "prospective study" OR "prospective survey" OR "prospective analysis" OR prospectiv* OR (("follow-up" or followup) W/1 (stud* or survey or analysis)) OR ((observation or observational) W/1 (study or survey or analysis)) OR "clinical study" OR "clinical trial" OR (("phase 0" or "phase 1" or "phase I" or "phase 2" or "phase II" or "phase 3" or "phase III" or "phase 4" or "phase IV") W/5 (trial or study)) OR "evaluation study" OR "evaluation survey" OR "evaluation analysis" OR "quantitative study" OR "quantitative analys*" OR "numerical study" OR "validation study" OR "validation survey" OR "validation analysis" OR "pilot study" OR "pilot survey" OR "pilot analysis" OR "pilot project" OR ((correlation* W/2 study) OR (correlation* W/2 analys*)) OR "case control study" OR "case base study" OR "case referrent study" OR "case referent study" OR "case referent study" OR "case compeer study" OR "case comparison study" OR "matched case control" OR "multicenter study" OR "multi-center study" OR "odds ratio" OR "confidence interval" OR "regression analysis" OR "least square" OR "least squares" OR ((study OR trial OR random* OR control*) AND compar*) OR "before after" or "before and after" or "time motion" or "time and motion" or (qualitative W/1 (study or survey or analysis)))
5	1 and 2 and 3 and 4

6	TITLE-ABS-KEY(newborn* or neonat* or infant* or toddler* or child* or adolescent* or paediatric* or pediatric* or girl or girls or boy or boys or teen or teens or teenager* or preschooler* or "pre-schooler*" or preteen or preteens or "pre-teen" or "pre-teens" or youth or youths) AND NOT TITLE-ABS-KEY(adult or adults or "middle age" or "middle aged" OR elderly OR geriatric* OR "old people" OR "old person*" OR "older people" OR "older person*" OR "very old")
7	5 and not 6
8	DOCTYPE(ab) OR DOCTYPE(ed) OR DOCTYPE(bk) OR DOCTYPE(er) OR DOCTYPE(no) OR DOCTYPE(sh)
9	7 and not 8
10	INDEX(embase) OR INDEX(medline) OR PMID(0* OR 1* OR 2* OR 3* OR 4* OR 5* OR 6* OR 7* OR 8* OR 9*)
11	9 and not 10