Published in final edited form as:

Cochrane Database Syst Rev. ; (1): CD008315. doi:10.1002/14651858.CD008315.pub2.

The effectiveness of strategies to change organisational culture to improve healthcare performance

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Abstract

Background—Organisational culture is an anthropological metaphor used to inform research and consultancy and to explain organisational environments. Great emphasis has been placed during the last years on the need to change organisational culture in order to pursue effective improvement of healthcare performance. However, the precise nature of organisational culture in healthcare policy often remains underspecified and the desirability and feasibility of strategies to be adopted has been called into question.

Objectives—To determine the effectiveness of strategies to change organisational culture in order to improve healthcare performance.

To examine the effectiveness of these strategies according to different patterns of organisational culture.

Search methods—We searched the following electronic databases for primary studies: The Cochrane Central Register of Controlled Trials, MEDLINE, EMBASE, CINAHL, Sociological Abstracts, Web of Knowledge, PsycINFO, Business and Management, EThOS, Index to Theses, Intute, HMIC, SIGLE, and Scopus until October 2009. The Database of Abstracts of Reviews of Effectiveness (DARE) was searched for related reviews. We also searched the reference lists of all

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Editorial group: Cochrane Effective Practice and Organisation of Care Group.

Publication status and date: New, published in Issue 1, 2011.

Review content assessed as up-to-date: 7 December 2010.

CONTRIBUTIONS OF AUTHORS EP, GF and MPE screened the titles and abstracts and selected the articles. FB developed the search strategies. EP led the writing of the review. All other authors provided comments on drafts and approved the final version.

DECLARATIONS OF INTEREST None known

papers and relevant reviews identified, and we contacted experts in the field for advice on further potential studies.

Selection criteria—We considered randomised controlled trials (RCTs) or well designed quasi-experimental studies, controlled clinical trials (CCTs), controlled before and after studies (CBAs) and interrupted time series analyses (ITS) meeting the quality criteria used by the Cochrane Effective Practice and Organisation of Care Group (EPOC). Studies should be set in any type of healthcare organisation in which strategies to change organisational culture in order to improve healthcare performance were applied. Our main outcomes were objective measures of professional performance and patient outcome.

Data collection and analysis—At least two review authors independently applied the criteria for inclusion and exclusion criteria to scan titles and abstracts and then to screen the full reports of selected citations. At each stage results were compared and discrepancies solved through discussion.

Main results—The search strategy yielded 4239 records. After the full text assessment, no studies met the quality criteria used by the EPOC Group and evaluated the effectiveness of strategies to change organisational culture to improve healthcare performance.

Authors' conclusions—It is not possible to draw any conclusions about the effectiveness of strategies to change organisational culture because we found no studies that fulfilled the methodological criteria for this review. Research efforts should focus on strengthening the evidence about the effectiveness of methods to change organisational culture to improve health care performance.

Medical Subject Headings (MeSH)

Organizational Culture; Quality of Health Care [*organization & administration; standards]

BACKGROUND

Organisational culture is an anthropological metaphor used to inform research and consultancy and to explain organisational environments (Mannion 2009).

Several definitions of organisational culture can be found in the literature (Alvesson 1995). They range from the extremely simple - “the way we do things around here” (Balogun 2004) - to the more complex definition proposed by Schien: “the pattern of shared basic assumption - invented, discovered or developed by a given group as it learns to cope with its problems of external adaptation and internal integration - that has worked well enough to be considered valid and therefore to be taught to new members as the correct way to perceive, think and feel in relationship to those problems” (Schien 1985). A consistent element of each of these definitions is that ‘organisational culture’ pertains to multiple aspects of what is shared among people within the same organisation. These shared characteristics may include: beliefs, values, norms of behaviour, routines, traditions, sense-making, etc. Culture is therefore a lens through which an organisation can be understood and interpreted (Konteh 2008). Scott 2003 highlighted that culture is not merely the observable in social life, but also the shared cognitive and symbolic context within which a society can be understood. For this reason they decided to adopt Schien’s definition that seemed to better include all the

different aspects of organisational culture (Scott 2003a). For this review we have chosen to do the same.

Why it is important to do this review

During the last several years, great emphasis has been placed on the need to change organisational culture alongside structural reforms to pursue effective improvement of healthcare performance (Davies 2000; Kennedy 2001; Scott 2003b). However, the management of culture change is a complicated task; its precise nature in healthcare policy often remains underspecified and the desirability and feasibility of strategies to be adopted has been called into question (Ormrod 2003).

A survey conducted in 275 English National Health Service (NHS) organisations in 2008 highlighted that a third of these organisations currently used a culture assessment instrument to support their clinical governance activity (Mannion 2009). Within this survey, Mannion et al reviewed the literature about instruments available to health services researchers wishing to measure culture and culture change. They identified two dozen tools used for culture assessment with potential relevance to healthcare organisations; yet relatively few of these had been used to any extent in the NHS. While existing tools cover many of the most important organisational culture attributes, their use tends to be focused on safety rather than on the assessment of dimensions of healthcare quality and performance. Moreover, little evaluation of the use and the practical application of these tools or how well they connect with ongoing policy, managerial or service preoccupations is available.

The idea that organisational culture can affect performance is based on the assumption that they are related, but evidence from the research literature for this link is weak (Scott 2003). A review conducted by Scott et al focused on this correlation (Scott 2003a). They qualitatively summarised ten empirical studies investigating the relationship between culture and performance and concluded that “there is some evidence to suggest that organisational culture may be a relevant factor in health care performance, yet articulating the nature of that relationship proves difficult”. More recently, Mannion et al compared, in a multiple case study design, the cultural characteristics of ‘high’ and ‘low’ performing hospitals in the UK NHS (Mannion 2005). They found that different cultural patterns could be identified within cases grouped by performance, and concluded that organisational culture is associated in non-trivial ways with performance, but they highlighted that the interpretation of their results should be tempered with a degree of caution because of some methodological flaws.

Nonetheless, the management of organisational culture is increasingly viewed as a necessary part of health system reform (Department of Health 2000; Institute of Medicine 1999; Smith 2000). In 2008 a survey conducted on a total of 325 English NHS primary and acute trusts revealed that 98% of clinical governance managers interviewed saw the need to measure local culture in order to foster change for improved performance; nearly all of them (99%) acknowledged the importance of understanding and shaping local cultures, but the majority (88%) were also conscious that there are many challenges to overcome to implement and sustain beneficial culture change (Konteh 2008). It is therefore timely and important to

review the literature on the effectiveness of strategies to change organisational culture in order to improve healthcare performance.

OBJECTIVES

To determine the effectiveness of strategies to change organisational culture in order to improve healthcare performance.

To examine the effectiveness of these strategies according to different patterns of organisational culture.

METHODS

Criteria for considering studies for this review

Types of studies—We considered randomised controlled trials (RCTs) or well designed quasi-experimental studies, controlled clinical trials (CCTs), controlled before and after studies (CBAs) and interrupted time series analyses (ITS) that met the quality criteria used by the Cochrane Effective Practice and Organisation of Care Group (EPOC). CBAs were only included if they had at least two intervention and two control sites. ITS were eligible if they had a clearly defined point in time when the intervention occurred and three data collection points before and after the intervention to take into account secular trends and auto-correlation among measurements over time (Ramsay 2003).

Types of participants—We considered studies set in any type of healthcare organisation in which strategies to change organisational culture were applied.

Types of interventions—We considered any strategy intended to change organisational culture in order to improve healthcare performance. The comparator could be normal care or any other active intervention.

Types of outcome measures

Main outcomes

- Objective measures of professional performance such as prescription rates, the extent to which care is evidence based, quality of care, and efficiency.
- Objective measures of patient outcome such as mortality (standardised mortality ratio), condition-specific measures of outcome, quality of life, functional health status, and patients' satisfaction.

Other outcomes

- Objective measures of organisational performance such as wait times, inpatient hospital stay times, and staff turnover rates.
- Measures of organisational culture.
- Economic outcomes such as efficiencies and decrease in costs.

We also considered measures of health practitioners' knowledge, attitudes, satisfaction, etc. because they could provide useful secondary information. Studies not reporting objective measures of performance or patient related outcomes were excluded.

Search methods for identification of studies

Electronic searches—See: EPOC Group methods used in reviews (EPOC 2010).

We searched the Database of Abstracts of Reviews of Effectiveness (DARE) for related reviews.

We searched the following electronic databases for primary studies

- The Cochrane Central Register of Controlled Trials (*The Cochrane Library* 2009, Issue 4)
- MEDLINE, Ovid (1950 to October Week 3 2009)
- EMBASE, Ovid (1980 to 2009 Week 41)
- CINAHL, EBSCO (1980-October 2009)
- Sociological Abstracts, CSA (1952-October 2009)
- Social Science Citation Index, Web of Knowledge (1970-October 2009)
- Science Citation Index, Web of Knowledge (1970-October 2009)
- Conference Proceedings, Web of Knowledge (1970-October 2009)
- PsycINFO, Ovid (1806 to October Week 3 2009)
- Business and Management, OCLC FirstSearch (1995-October 2009)
- EThOS (British Library)
- Index to Theses (1716-October 2009)
- Intute
- HMIC, Ovid (1979-October 2009)
- SIGLE
- Scopus (1823-October 2009)

Search strategies for primary studies incorporated the methodological component of the EPOC search strategy combined with selected index terms and free text terms. We translated the MED-LINE search strategy into the other databases using the appropriate controlled vocabulary as applicable.

Full strategies for all databases are included in Appendices.

Searching other resources—We searched the reference lists of all papers and relevant reviews identified and we contacted experts in the field for advice on further potential studies.

Data collection and analysis

Selection of studies—We downloaded all titles and abstracts retrieved by electronic searching to the reference management database EndNote and removed duplicates. At least two review authors (EP, GF, MPE) independently examined the remaining references. We excluded those studies which clearly did not meet the inclusion criteria and obtained copies of the full text of potentially relevant references. At least two review authors (EP, GF, MES, MPE, NB) independently assessed the eligibility of retrieved papers.

Data extraction and management—We designed a modified version of the EPOC Data Collection Checklist (EPOC 2010), but this was not implemented, as no study was found to be eligible for inclusion in this review.

If in future updates eligible studies are found, at least two reviewers (EP, GF, MES, NB) will independently extract the data using the modified checklist. We will use the same criteria as those outlined in the *Cochrane Handbook for Systematic Reviews of Interventions* to evaluate data (Higgins 2008) and we will solve any disagreement by discussion and the involvement of an arbitrator (MPE) as necessary.

Assessment of risk of bias in included studies—Studies eligible for the review were to be assessed for the risk of bias using the criteria suggested by EPOC (EPOC 2010). RCTs, CCTs and CBAs were to be assessed for generation of allocation sequence, concealment of allocation, baseline outcome measurements, baseline characteristics, incomplete outcome data, blinding of outcome assessor, protection against contamination, selective outcome reporting and other risks of bias. In ITS we would have also assessed the independence of the intervention from other changes, the pre-specified shape of the intervention and if the intervention is unlikely to affect data collection. We were to resolve any disagreement by discussion and the involvement of an arbitrator (MPE) as necessary.

Measures of treatment effect—Should eligible studies be found in the future, we will report data in natural units. Where baseline results are available from RCTs, CCTs and CBAs, we will report pre-intervention and post-intervention means or proportions for both study and control groups and we will calculate the unadjusted and adjusted (for any baseline imbalance) absolute change from baseline with 95% confidence intervals.

For ITS designs we will report the main outcomes in natural units and two effect sizes: the change in the level of outcome immediately after the introduction of the intervention and the change in the slopes of the regression lines. Both of these estimates are necessary for interpreting the results of each comparison. For example, there could have been no change in the level immediately after the intervention, but there could have been a significant change in slope.

We will present the results for all comparisons using a standard method of presentation where possible. For comparisons of RCTs, CCTs and CBAs we will report (separately for each study design): median effect size across included studies, inter-quartile ranges of effect sizes across included studies and range of effect sizes across included studies. Where studies report more than one measure for each endpoint, we will abstract the primary measure (as

defined by the authors of the study) or the median measure identified. We will attempt to re-analyse studies with potential unit of analysis errors where possible. If a comparison is re-analysed then we will quote the P value and annotate it with 're-analysed'. If this is not possible, we will report only the point estimate.

Assessment of heterogeneity—If meta-analysis is possible in future updates, we will explore heterogeneity using forest plots and quantify if using the I^2 statistic. The generated forest plots will assist us in interpreting the degree of heterogeneity between studies. We will also assess forest plots by visual examination (Egger 1997; Higgins 2002).

Data synthesis—In future updates, a meta-analysis will be carried out only if we have a sufficient number of studies that are homogeneous regarding population, interventions and comparisons. If we do not find enough studies for a meta-analysis, we will report the review as a descriptive narrative only.

For studies that are sufficiently homogenous in terms of setting, design and intervention, we will use a fixed-effect model. Where there is evidence of heterogeneity, we will apply a random-effects model. We will perform data synthesis using Review Manager 5 (RevMan 2008).

We will present the main findings on professional performance such as quality of care and efficiency and on relevant patient outcomes such as mortality and quality of life in a 'Summary of findings' table. This will include information regarding the magnitude of the effects of the interventions and the quality of evidence and will summarise the available data for each of the main outcomes of interest. For dichotomous outcomes (i.e. mortality), we will include both relative and absolute measures of effect. For other types of outcomes, we will include at least a relative or absolute measure of effect. Where possible, we will include both relative and absolute measures of effect.

We will use GRADEprofiler software to assist in the preparation of the 'Summary of findings' tables (GRADEpro 2010).

Subgroup analysis and investigation of heterogeneity—Heterogeneity will be interpreted in relation to: organisational culture patterns, settings and type of intervention. Where sufficient data are available, we will perform subgroup analyses to compare outcomes for these categories.

Sensitivity analysis—Should eligible studies be found in the future for the primary meta-analysis, comparing the effectiveness of interventions to change organisational culture versus no intervention, we will undertake a sensitivity analysis to investigate how the pooled intervention effect is affected by the inclusion of RCTs at an unclear or high risk of bias. In addition, we will investigate if the pooled intervention effect is robust to our assumptions of intra-cluster correlations.

RESULTS

Description of studies

See: Characteristics of excluded studies.

The search strategy led to the identification of 4239 records. After the independent examination by the reviewers, we retrieved 13 articles that were potentially eligible for the review. Three more articles were identified by searching the reference lists of the retrieved ones. After the full text assessment, no study was found meeting the quality criteria used by the Cochrane EPOC Group and evaluating the effectiveness of strategies to change organisational culture to improve healthcare performance. A description of retrieved studies and reasons for their exclusion are presented in the 'Characteristics of excluded studies' section.

Risk of bias in included studies

No eligible studies were found for inclusion in this review.

Effects of interventions

No eligible studies were found for inclusion in this review.

DISCUSSION

It is not possible to draw any conclusions about the effectiveness of strategies to change organisational culture since we found no studies that fulfilled the methodological criteria for this review.

Although no reliable evidence yet exists, there are examples (within the excluded studies) of researchers attempting to evaluate strategies to change organisational culture. One example is the CBA study by Larson et al (Larson 2000) which assessed the impact of an intervention to change organisational culture on frequency of staff handwashing to decrease nosocomial infection rate. It was excluded because it was a CBA with only one intervention and one control site and therefore any intervention effect is confounded by a possible (unknown) site effect. Similar criteria excluded Kinjerski et al (Kinjerski 2008), a study assessing the effectiveness of a program to improve spirit at work and staff wellness at a long term care site. This latter study did measure a change in culture. If researchers are evaluating interventions to change organisational culture and wish to produce generalisable findings, they should use designs that would allow general inferences to be made with more confidence than is possible with the currently used designs.

Research efforts should focus on strengthening the evidence about the effectiveness of methods to change organisational culture to improve healthcare performance.

AUTHORS' CONCLUSIONS

Implications for practice

No conclusions can be made about the effectiveness of strategies to change organisational culture to improve healthcare performance. Healthcare organisations considering implementing interventions aimed at changing culture should seriously consider conducting an evaluation (using a robust design, e.g. ITS) to strengthen the evidence about this topic.

Implications for research

High quality evidence on the effectiveness of strategies to change organisational culture is lacking. The focus of this review was on the effectiveness of strategies to change organisational culture. However, it may be the case that researchers need to continue to work to establish a clear definition of organisational culture and agreed on reliable methods of measuring it. Researchers wishing to evaluate the effectiveness of strategies to change organisational culture should conduct evaluations using appropriately robust designs if the intent is to offer generalisable findings.

Acknowledgments

We would like to thank Heather Dickinson who collaborated to the conception of this review and Tomas Pantoja, Craig Ramsay and Peter Tugwell for their helpful comments on the protocol.

SOURCES OF SUPPORT

Internal sources

- Newcastle University, UK.
- University of Modena and Reggio Emilia, Italy.

External sources

- National Institute of Health Research, UK.

Appendix 1. Cochrane Library search strategy

1. Organizational culture/
2. (organisation* NEAR/5 cultur*):ti or (organization* NEAR/5 cultur*):ti or (organisation* NEAR/5 cultur*):ab or (organization* NEAR/5 cultur*):ab
3. (corporate NEXT culture* or workplace NEXT culture* or work NEXT culture* or organisation* NEXT ethos or organization* NEXT ethos or organisation* NEXT climate* or organization* NEXT climate*):ti or (corporate NEXT culture* or workplace NEXT culture* or work NEXT culture* or organisation* NEXT ethos or organization* NEXT ethos or organisation* NEXT climate* or organization* NEXT climate*):ab
4. 1 or 2 or 3

Appendix 2. MEDLINE search strategy

1. Organizational culture/

2. (organi?ation\$ adj5 cultur\$).ti,ab.
3. (corporate culture? or workplace culture? or work culture? or organ?ation\$ ethos or organi?ation\$ climate?).ti,ab
4. 1 or 2 or 3
5. randomized controlled trial.pt.
6. random\$.tw.
7. intervention\$.tw.
8. control\$.tw.
9. evaluat\$.tw.
10. or/1-5
11. Animals/
12. Humans/
13. 11 not (11 and 12)
14. 10 not 13
15. 4 and 14

Appendix 3. EMBASE search strategy

1. (organi?ation\$ adj5 cultur\$).ti,ab.
2. (corporate culture? or workplace culture? or work culture? or organ?ation\$ ethos or organi?ation\$ climate?).ti,ab
3. 1 or 2
4. randomized controlled trial/
5. (randomised or randomized).tw.
6. experiment\$.tw.
7. (time adj series).tw.
8. (pre test or pretest or post test or posttest).tw.
9. impact.tw.
10. intervention?.tw.
11. chang\$.tw.
12. evaluat\$.tw.
13. effect?.tw.
14. compar\$.tw.
15. or/1-11

16. nonhuman/
17. 15 not 16
18. 3 and 17

Appendix 4. CINHAL search strategy

Organizational culture/ NT Organizational Politics

1. (MH "Organizational Culture+")
2. TI (organi?ation* N5 cultur*) or AB (organi?ation* N5 cultur*)
3. TI (corporate culture* or workplace culture* or work culture* or organ?ation* ethos or organi?ation* climate*) or AB (corporate culture* or workplace culture* or work culture* or organ?ation* ethos or organi?ation* climate*)
4. 1 or 2 or 3
5. (MH "Clinical Trials+") or (MH "Comparative Studies") or (MH "Pretest-Posttest Design") or (MH "Quasi-Experimental Studies+")
6. TI (control* or random* or experiment or time series or impact or intervention? or evaluat* or effect?) or AB (control* or random* or experiment or time series or impact or intervention? or evaluat* or effect?)
7. 5 or 6
8. 4 and 7

Appendix 5. Sociological Abstracts search strategy

1. DE=("Organizational culture")
2. TI=(organi?ation* WITHIN 5 cultur*) or AB=(organi?ation* WITHIN 5 cultur*)
3. TI=(corporate culture* or workplace culture* or work culture* or organ?ation* ethos or organi?ation* climate*) or AB=(corporate culture* or workplace culture* or work culture* or organ?ation* ethos or organi?ation* climate*)
4. 1 or 2 or 3
5. DE=("nurses" or "health professions" or "physicians" or "dentists" or exp "health" or exp "health care services" or "pharmacists" or "psychiatrists" or "psychologists")
6. TI=(health or hospital* or "primary care" or "primary health care" or nurse* or doctor* or GP or physician* or clinician* or dentist* or dental or gyn?ecologist* or h?ematologist* or internist* or obstetrician* or p?ediatrician* or pharmacist* or physiotherapist* or psychiatrist* or psychologist* or radiologist* or surgeon* or surgery or therapist* or counse?lor* or neurologist* or optometrist*) or AB=(health or hospital* or "primary care" or "primary health care" or nurse* or doctor* or GP or physician* or clinician* or dentist* or dental or gyn?ecologist* or h?

ematologist* or internist* or obstetrician* or p?ediatrician* or pharmacist* or physiotherapist* or psychiatrist* or psychologist* or radiologist* or surgeon* or surgery or therapist* or counse?lor* or neurologist* or optometrist*) (terms taken from REBEQI search)

7. 5 or 6
8. TI=(randomi?ed or experiment* or impact* or intervention* or evaluat* or effect* or comparative or pre test or pretest or posttest or post test) or AB=(randomi?ed or experiment* or impact* or intervention* or evaluat* or effect* or comparative or pre test or pretest or posttest or post test)
9. TI=(time WITHIN 2 series) or TI=(random* WITHIN 2 allocat*) or TI=(random* WITHIN 2 assign*) or TI=(controlled WITHIN 2 trial*) or TI=(controlled WITHIN 2 study) or AB=(time WITHIN 2 series) or AB=(random* WITHIN 2 allocat*) or AB=(random* WITHIN 2 assign*) or AB=(controlled WITHIN 2 trial*) or AB=(controlled WITHIN 2 study)
10. 8 or 9
11. 4 and 7 and 10

Appendix 6. Web of Knowledge: SCI, SSCI, Conference Proceedings search strategy

1. TS=(organisation* SAME cultur*) or TS=(organization* SAME cultur*)
2. TS=(“corporate culture*” or “workplace culture*” or “work culture*” or “organization* ethos” or “organisation* ethos” or “organization* climate*” or “organisation* climate”)
3. 1 or 2
4. TS=(health OR hospital* OR nurse* OR doctor* OR GP OR physician* OR clinician* OR dentist* OR dental OR gyn\$ecologist* OR h\$ematologist* OR internist* OR obstetrician* OR p\$ediatrician* OR pharmacist* OR physiotherapist* OR psychiatrist* OR psychologist* OR radiologist* OR surgeon* OR surgery OR therapist* OR counsel\$or* OR neurologist* OR optometrist OR “primary care” OR “primary health care”)
5. TS=(randomi?ed or experiment* or impact* or intervention* or evaluat* or effect* or comparative or “time series”)
6. TS=(random* SAME allocat*) or TS=(random* SAME assign*) or TS=(controlled SAME trial*) or TS=(controlled SAME study)
7. 5 or 6
8. 3 and 4 and 7

Appendix 7. PsycINFO search strategy

1. Organizational climate/
2. (organi?ation\$ adj5 cultur\$).ti,ab.
3. (corporate culture? or workplace culture? or work culture? or organ?ation\$ ethos or organi?ation\$ climate?).ti,ab
4. 1 or 2 or 3
5. (randomi?ed or experiment* or impact* or intervention* or evaluat* or effect* or comparative or pre test or pretest or posttest or post test).tw
6. ((time adj2 series) or (random* adj2 allocat*) or (random* adj2 assign*) or (controlled adj2 trial*) or (controlled adj2 study)).tw
7. 5 or 6
8. exp Health Care Services/
9. (health care or primary care or hospital* or surgery or surgeries).tw
10. exp Health Personnel/ or exp Clinicians/ or exp Counselors/ or exp Therapists/ or exp Social Workers/
11. (nurse* or doctor* or GP or physician* or clinician* or dentist* or dental or gyn? ecologist* or h?ematologist* or internist* or obstetrician* or p?ediatrician* or pharmacist* or physiotherapist* or psychiatrist* or psychologist* or radiologist* or surgeon* or surgery or therapist* or counsel?or* or neurologist* or optometrist*).tw
12. Or/8-11
13. 4 and 7 and 12

Appendix 8. Business & Management search strategy

1. kw: organi#ation* n5 culture+ or kw: corporate w culture+ or kw: workplace w culture+ or kw: work w culture+ or kw: organi# ation* w ethos or kw: organi#ation* w climate+
2. kw: health w2 trust OR kw: hospital+ OR kw: nurse+ OR kw: doctor+ OR kw: GP OR kw: physician+ OR kw: clinician+ OR kw: dentist+ OR kw: dental OR kw: gynecologist+ OR kw: gynaecologist+ OR kw: hematologist+ OR kw: haematologist+ OR kw: internist+ OR kw: obstetrician+ OR kw: pediatrician+ OR kw: paediatrician+ OR kw: pharmacist+ OR kw: physiotherapist+ OR kw: psychiatrist+ OR kw: psychologist+ OR kw: radiologist+ OR kw: surgeon+ OR kw: surgery OR kw: therapist+ OR kw: counselor+ OR kw: counsellor+ OR kw: neurologist+ OR kw: optometrist OR kw: primary w2 care
3. kw: randomly or kw: randomi* or kw: factorial* or kw: controlled w2 trial* or kw: evaluat* or kw: trial* or kw: experiment* or kw: study or kw: studies or kw: design or kw: crossover* or kw: cross-over* or kw: cross w over or kw: placebo* or kw:

assign* or kw: volunteer* or kw: intervention* or kw: effect* or kw: compar* or
kw: impact+ or kw: time w series

4. 1 and 2 and 3

Appendix 9. Scopus search strategy

#1 INDEXTERMS(organizational culture))

#2 TITLE((organisation* W/5 culture*) OR (organization* W/5 culture*) OR
(corporate culture*) OR (workplace culture*) OR (work culture*) OR (organisation*
ethos) OR (organization* ethos) OR (organisation* climate*) OR (organization*
climate*))

#3 ABS((organisation* W/5 culture*) OR (organization* W/5 culture*) OR (corporate
culture*) OR (workplace culture*) OR (work culture*) OR (organisation* ethos) OR
(organization* ethos) OR (organisation* climate*) OR (organization* climate*))

#4 #1 OR #2 OR #3

#5 TITLE(health OR hospital* OR nurse* OR doctor* OR gp OR physician* OR
clinician* OR dentist* OR dental OR gynecologist* OR gynaecologist* OR
hematologist* OR haematologist* OR internist* OR obstetrician* OR pediatrician* OR
paediatrician* OR pharmacist* OR physiotherapist* OR psychiatrist* OR
psychologist* OR radiologist* OR surgeon* OR surgery OR therapist* OR counselor*
OR counsellor* OR neurologist* OR optometrist OR "primary care" OR "primary
health care")

#6 ABS(health OR hospital* OR nurse* OR doctor* OR gp OR physician* OR
clinician* OR dentist* OR dental OR gynecolo-gist* OR gynaecologist* OR
hematologist* OR haematologist* OR internist* OR obstetrician* OR pediatrician* OR
paediatrician* OR pharmacist* OR physiotherapist* OR psychiatrist* OR
psychologist* OR radiologist* OR surgeon* OR surgery OR therapist* OR counselor*
OR counsellor* OR neurologist* OR optometrist OR "primary care" OR "primary
health care")

#7 #5 OR #6

#8 TITLE(randomly OR randomi* OR factorial* OR "controlled trial" OR evaluat* OR
trial* OR experiment* OR study OR studies OR design OR crossover* OR cross-over*
OR "cross over" OR placebo* OR assign* OR volunteer* OR intervention* OR effect*
OR compar* OR impact OR "time series")

#9 ABS(randomly OR randomi* OR factorial* OR "controlled trial" OR evaluat* OR
trial* OR experiment* OR study OR studies OR design OR crossover* OR cross-over*
OR "cross over" OR placebo* OR assign* OR volunteer* OR intervention* OR effect*
OR compar* OR impact OR "time series")

#10 #8 OR #9

#11 #4 AND #7 AND #10

Appendix 10. Other search strategies

ETHOS (theses)

“Organisational culture” or “organizational culture”

Index to Theses

(organi?ation w/5 cultur*) and health

Intute

Organisational culture or organizational culture in any field.

HMIC

organisational culture and methods (as psycinfo)

SIGLE

((“organisational culture” OR “organizational culture”) AND (health OR care))

CHARACTERISTICS OF STUDIES

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Christianson 1997	Descriptive
Clemmer 1999	No control
Conly 1989	Not on changing culture
Huq 2000	Quasi-qualitative case study
Jain 2006	No control
Kinjerski 2008	CBA with only one intervention and one control site
Larson 1997	Not on changing culture
Larson 2000	CBA with only one intervention and one control site
Leclair 1987	Not on changing culture
Lesmond 2008	No objective outcome measures
Lewis 2009	No objective outcome measures
Lindberg 2005	No sufficient data points to be re-analysed as an ITS
Lokk 2000	Not on changing culture
Mauno 2006	CBA with only one intervention and one control site
Morris 2007	Not on changing culture

DATA AND ANALYSES

This review has no analyses.

HISTORY

Protocol first published: Issue 1, 2010

Review first published: Issue 1, 2011

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

We searched more databases than the ones declared in the protocol.

References to studies excluded from this review

- Christianson 1997 {published data only} . Christianson JB, Pietz L, Taylor R, Woolley A, Knutson DJ. Implementing programs for chronic illness management: the case of hypertension services. *Joint Commission Journal on Quality Improvement*. 1997; 23(11):593–601. [PubMed: 9407263]
- Clemmer 1999 {published data only} . Clemmer TP, Spuhler VJ, Oniki TA, Horn SD. Results of a collaborative quality improvement program on outcomes and costs in a tertiary critical care unit. *Critical Care Medicine*. 1999; 27(9):1768–74. [PubMed: 10507596]
- Conly 1989 {published data only} . Conly JM, Shirley H, Ross J, Lertzman J, Louie TJ. Handwashing practices in an intensive care unit: the effects of an educational program and its relationship to infection rates. *American Journal of Infection Control*. 1989; 17(6):330–9. [PubMed: 2596730]
- Huq 2000 {published data only} . Huq Z, Martin TN. Workforce Cultural Factors in TQM/CQI Implementation in Hospitals. *Health Care Management Review*. 2000; 25(3):80–93. [PubMed: 10937339]
- Jain 2006 {published data only} . Jain M, Miller L, Belt D, King D, Berwick DM. Decline in ICU adverse events, nosocomial infections and cost through a quality improvement initiative focusing on teamwork and culture change. *Quality & Safety in Health Care*. 2006; 15(4):235–9. [PubMed: 16885246]
- Kinnerski 2008 {published data only} . Kinnerski V, Skrypnik BJ. The promise of spirit at work: increasing job satisfaction and organizational commitment and reducing turnover and absenteeism in long-term care. *Journal of Gerontological Nursing*. 2008; 34(10):17–25. [PubMed: 18942536]
- Larson 1997 {published data only} . Larson EL, Bryan JL, Adler LM, Blane C. A multifaceted approach to changing handwashing behavior. *American Journal of Infection Control*. 1997; 25(1):3–10. [PubMed: 9057937]
- Larson 2000 {published data only} . Larson EL, Early E, Cloonan P, Sugrue S, Parides M. An organizational climate intervention associated with increased handwashing and decreased nosocomial infections. *Behavioral Medicine*. 2000; 26(1):14–22. [PubMed: 10971880]
- Leclair 1987 {published data only} . Leclair JM, Freeman J, Sullivan BF, Crowley CM, Goldmann DA. Prevention of nosocomial respiratory syncytial virus infections through compliance with glove and gown isolation precautions. *New England Journal of Medicine*. 1987; 317(6):329–34. [PubMed: 3600729]
- Lesmond 2008 {published data only} . Lesmond J. Cultural competency training and perceived client outcomes by health care workers, in organizations serving clients with HIV/AIDS.

- Dissertation Abstracts International Section A: Humanities and Social Sciences. 2008; 69(5-A): 1636.
- Lewis 2009 {published data only} . Lewis PH. Readiness to change toward cultural awareness and sensitivity in a state mental health organization. Dissertation Abstracts International Section A: Humanities and Social Sciences. 2009; 69(8-A):3312.
- Lindberg 2005 {published data only} . Lindberg E, Rosenqvist U. Implementing TQM in the health care service: a four-year following-up of production, organisational climate and staff wellbeing. *International Journal of Health Care Quality Assurance*. 2005; 18(4/5):370–84.
- Lokk 2000 {published data only} . Lokk CT, Arnetz BB. Impact of management change and an intervention program on health care personnel. *Psychotherapy & Psychosomatics*. 2000; 69(2): 79–85. [PubMed: 10671828]
- Mauno 2006 {published data only} . Mauno S, Ruokolainen M. The family supportiveness of the organizational culture and well-being at work. *Psykologia*. 2006; 41(4):269–85.
- Morris 2007 {published data only} . Morris A, Bloom JR, Kang S. Organizational and individual factors affecting consumer outcomes of care in mental health services. *Administration and Policy in Mental Health and Mental Health Services Research*. 2007; 34(3):243–53. [PubMed: 17096194]
- Zazzali 2008 {published data only} . Zazzali JL, Sherbourne C, Hoagwood KE, Greene D, Bigley MF, Sexton TL. The adoption and implementation of an evidence based practice in child and family mental health services organizations: a pilot study of functional family therapy in New York State. *Administration & Policy in Mental Health*. 2008; 35(1-2):38–49. [PubMed: 17985232]

Additional references

- Alvesson 1995 . Alvesson, M. Cultural perspectives on organisations. Cambridge University Press; 1995.
- Balogun 2004 . Balogun, J.; Hailey, VH. Exploring strategic change. Prentice Hall; London: 2004.
- Davies 2000 . Davies HTO, Nutley SM, Mannion R. Organisational culture and quality of health care. *Quality in Health Care*. 2000; 9:111–9. [PubMed: 11067249]
- Department of Health 2000 . Shifting the balance of power within the NHS: securing delivery. Department of Health; London: 2000. Department of Health.
- Egger 1997 . Egger M, Davey Smith GD, Schneider M, Minder C. Bias in meta-analysis detected by simple graphical test. *BMJ*. 1997; 315:629–34. [PubMed: 9310563]
- EPOC 2010 . Effective Practice and Organisation of Care group. EPOC Website. <http://epoc.cochrane.org/epoc-resources-review-authors>
- GRADEpro 2010 . Cochrane IMS Website. <http://www.cc-ims.net/revman/other-resources/grade><http://www.cc-ims.net/revman/other-resources/grade>GRADEprofiler. Cochrane IMS Website. 2010. <http://www.cc-ims.net/revman/other-resources/grade><http://www.cc-ims.net/revman/other-resources/grade>
- Higgins 2002 . Higgins JP, Thompson SG. Quantifying heterogeneity in a meta-analysis. *Statistics in Medicine*. 2002; 21:1539–58. [PubMed: 12111919]
- Higgins 2008 . Higgins, JP.; Green, S., editors. Cochrane Handbook for Systematic Reviews of Intervention. John Wiley & Sons; Chichester: 2008.
- Institute of Medicine 1999 . Institute of Medicine. To Err is Human: Building a Safer Health System. National Academy Press; Washington DC: 1999.
- Kennedy 2001 . Kennedy, I. Learning from Bristol: public inquiry into children's heart surgery at the Bristol Royal Infirmary 1984-1995. Stationery Office; London: 2001.
- Konteh 2008 . Konteh FH, Mannion R, Davies HTO. Clinical governance views on culture and quality improvement. *Clinical Governance: An International Journal*. 2008; 13(3):200–7.
- Mannion 2005 . Mannion R, Davies HTO, Marshall MN. Cultural characteristics of “high” and “low” performing hospitals. *Journal of Health Organisation and Management*. 2005; 19(6):431–9.

- Mannion 2009 . Mannion R, Konteh FH, Davies HTO. Assessing organisational culture for quality and safety improvement: a national survey of tools and tool use. *Quality & Safety in Health Care*. 2009; 18:153–6. [PubMed: 19342532]
- Ormrod 2003 . Ormrod S. Organisational culture in health service policy and research third way: political fad or policy development? *Policy Polit*. 2003; 31:227–37.
- Ramsay 2003 . Ramsay CR, Matowe L, Grilli R, Grimshaw JM, Thomas RE. Interrupted time series designs in health technology assessment: lessons from two systematic reviews of behaviorchange strategies. *Int J Technol Assess Health Care*. 2003; 19(4):613–23. [PubMed: 15095767]
- RevMan 2008 . Copenhagen:The Nordic Cochrane Centre. The Cochrane Collaboration. Review Manager 5.0. The Nordic Cochrane Centre, The Cochrane Collaboration; Copenhagen: 2008.
- Schien 1985 . Schien, E. Organizational culture and leadership. Jossey-Bass; San Francisco: 1985.
- Scott 2003 . Scott JT, Mannion R, Davies HTO, Marshall MN. Implementing culture change in healthcare: theory and practice. *International Journal of Quality in Healthcare*. 2003; 15:111–8.
- Scott 2003a . Scott JT, Mannion R, Davies HTO, Marshall MN. Does organisational culture help to explain health care performance? A review of the evidence. *Journal of Health Services Research & Policy*. 2003; 8:105–17. [PubMed: 12820673]
- Scott 2003b . Scott, JT.; Mannio, R.; Davies, HTO.; Marshall, MN. Healthcare Performance and Organisational Culture. Radcliffe Medical Press; Oxford: 2003. Healthcare Performance and Organisational Culture.
- Smith 2000 . Smith, P.; Measuring, Up. Improving Health System Performance in OECD Countries. OECD; Paris: 2000.

* Indicates the major publication for the study

PLAIN LANGUAGE SUMMARY

Strategies to change organisational culture to improve healthcare performance

‘Organisational culture’ refers to the shared characteristics among people within the same organisation. These characteristics may include: beliefs, values, norms of behaviour, routines, traditions, and sense-making. In the last several years, great emphasis has been placed on changing both organisational culture and organisational structure to improve healthcare performance. While the management of organisational culture is increasingly viewed as a necessary part of health system reform, evidence from the research literature on the link between organisational culture and health performance is weak. Therefore, It is important for policymakers to review the effectiveness of strategies aiming to change organisational culture on healthcare performance.

This Cochrane review did not find any rigorous evidence to demonstrate the effect of strategies to change organisational culture on healthcare performance. There are examples (within the excluded studies) of researchers attempting to do this, but well designed studies are lacking.