

Appendix 8.9 Published literature (results, subdimensions) at the macro, meso and micro levels (Review 1)

First authors & year of publication	Subdimension(s)	Level	Objectives/purposes	Name of instrument to measure safety culture/safety climate	Main results
Auer et al., 2014	Leadership / Positive learning	Micro	Explore the associations between hospital management support for patient safety, registered nurses' trust in hospital management, and their overall perception of patient safety, considering	7 items from the "safety and quality" subsection of the RN4CAST nurse questionnaire (Six of these items were originally used in the Agency for Healthcare Research and Quality's Hospital Survey on Patient Safety Culture, which consists of 42 items reflecting 12 dimensions)	Higher hospital management support for patient safety is related to overall higher perceptions of safety and trust in hospital management, with various aspects of safety-related communication acting as partially mediating variables. Improving patient safety requires an open and blame-free environment to support uninhibited communication, feedback and communication on errors, and organizational learning. Higher hospital management support for patient safety was related to overall higher perceptions of safety with aspects of safety communication, that is, non-punitive response to error, communication openness, organizational learning, and communication of errors, functioning as important factors playing a partial mediating role. Analysis indicated a moderate direct association between "management support for patient safety" and "trust in management". The clear determination of chief nursing officers to promote patient safety is crucial in creating and maintaining a care delivery system focused on prevention of harmful events, while concurrently responding to Adverse Events and their consequences. Developing a culture of patient safety might require concentrated efforts by hospital leaders to foster various aspects of safety communication, such as an open and blame-free environment, to support open safety communication.
Ausserhofer et al., 2012	Survey on SC / Just culture	Micro	We aimed (1) to describe the nurse-reported engagement in safety behaviours, (2) to describe the prevailing nurse-reported patient safety climate of general medical, surgical and mixed medical-surgical units in Swiss acute-care hospitals and (3) to explore differences between hospital type, unit type and language regions.	RN4CAST study (Nurse Forecasting: Human Resources Planning in Nursing) - The 9-item Safety Organizing Scale (SOS)	In 33 of the 120 units (27.5%), at least 60% of nurses reported a positive patient safety climate. Nurses in the German-speaking region reported a more positive patient safety climate than nurses in the French- and Italian-speaking language regions. The PSC variability between units and between hospitals was in general higher than the variability between medical or surgical units and between university/cantonal or regional hospitals. Hospital leaders at various levels should strengthen the PSC at the unit level and support/foster healthcare professionals' engagement in safety behaviours by implementing safety methods such as root cause analysis, patient safety leadership walk rounds or safety briefings and de-briefings.
Ausserhofer et al., 2012	Methodology	Micro	This paper aims to report on the method and practical use of the CVI, as well as the results on content validity testing of the „Safety Organizing Scale“ (SOS),	Safety Organizing Scale (SOS)	Based on the S-CVI/Ave values, both the SOS-CH and SOS-DE can be considered to have good content validity. These instruments can be used in German-speaking regions in studies to assess safety climate and to test the further psychometric properties of the two SOS versions. The instrument was recently used in Switzerland in the European RN4CAST study (Sermeus et al., 2011). With appropriate evidence of construct validity

					(convergent and discriminant validity), criterion validity, and reliability, the SOS can be used in practice, for example, for monitoring safety climate in hospitals.
Ausserhofer et al., 2013	Methodolgy / Resources and training	Micro	The Safety Organizing Scale (SOS) offers a reliable snapshot of nurses' engagement in unit-level safety behaviours in hospitals. As no comparable questionnaire exists in German, French and Italian, we explored the psychometric properties of SOS translations into each of those languages.	Safety Organizing Scale (SOS)	NA (psychometric)
Ausserhofer et Gehri, 2015	Evidence-based practices and guidelines	Micro	To evaluate whether the RN4CAST study report had been analysed in the hospitals and whether this study report had stimulated practice and quality development in the hospitals.	NA	Based on the RN4CAST study report, 22 of the acute hospitals identified opportunities for improvement in the areas of patient safety and quality of care. Differences between the hospital categories are also recognisable here. While all four university hospitals and 14 of the 15 primary care hospitals identified opportunities for improvement, the proportion of centre hospitals was less than half (46%). In half of the participating hospitals, corresponding improvement measures were planned and in 8 of the hospitals such measures have been implemented. More than half of the hospitals have identified potential for improvement in the areas of quality of the working environment, safety culture/climate and nursing staff results,
Bezzola, 2011	Evidence-based practices and guidelines	Macro	Présentation du programme "Sécurité de la chirurgie en Suisse" proposé par la Fondation pour la Sécurité des Patients. L'élément central est une check-list, mais l'organisation des processus et des structures ainsi qu'une mise en oeuvre systématique sont décisives	NA	A checklist is both an aid and an element of the process: focusing on the essentials. This increases the efficiency of the team's work. This allows professionals to focus on the complex issues to be solved in the operating room. The WHO World Alliance for Patient Safety has been promoting an internationally recognized checklist since 2009, titled "Safe Surgery Saves Lives."
Briner et al., 2010	Methodology	Micro	Clinical risk management (CRM) plays a crucial role in enabling hospitals to identify, contain, and manage risks related to patient safety. So far, no instruments are available to measure and monitor the level of implementation of CRM. Therefore, our objective was to develop an	Self-developed survey (6 interviews)	NA (psychometric)

			instrument for assessing CRM in hospitals.		
Briner et Manser, 2013	Clinical risk managment	Micro	A scientific understanding of clinical risk management (CRM) in mental health care is essential for building safer health systems and for improving patient safety. While evidence on patient safety and CRM in physical health care has increased, there is limited research on these issues in mental health care. This qualitative study provides an overview of the most important clinical risks in mental health and related organizational management practices.	NA	Whereas medication errors are in the uppermost position of risks to patients in hospitals for physical disorder, CRM in mental health is first concerned with violence and self-harm. Self-destructive behaviour (mainly suicide and attempted suicide) was mentioned the most, followed by violence/aggression from patients against others. In terms of CRM, this implies that the main goal, above all, is to protect patients and staff from other patients, as well as to protect patients from themselves. Professional interventions can reduce violence in many cases. Important to achieving this are sensitization, education and training of staff as well as the use of preventive instruments to predict violence.
Conen, 2011	Evidence-based practices and guidelines	Micro	Explore patient safety. Measures that aim to make the complex delivery processes safer and to change the systems in which healthcare is provided, focusing on the establishment of a safety culture, have come to the forefront.	NA	These issues are rooted in the systems themselves, in poor communication, unresolved interface problems, the human-machine interaction, lack of standardization of processes, failure to follow rules, neglect of "simple" checklists, and failure to adhere to basic hygiene practices, such as hand hygiene. Patient safety needs to become embedded in the culture of healthcare, not just in the sense of individual high standards, but a widespread acceptance of understanding of risk and safety and the need of everyone to actively promote patient safety.
Cullati et al., 2013	Evidence-based practices and guidelines	Micro	To determine whether the items on the Time Out and the Sign Out of the Surgical Safety Checklist are properly checked by operating room (OR) staff and to explore whether the number of checked items is influenced by the severity of the intervention and the use of the checklist as a memory tool during the Time Out and the Sign Out periods.	NA	Severity of interventions influenced the number of items properly checked. This study showed that OR teams performed the Time Out and the Sign Out quasi systematically, a result already observed elsewhere, suggesting that the Time Out and the Sign Out have now entered into the OR routine. This suggests that many items were not addressed at all. This result is noteworthy considering that the presence of two observers has probably increased the checklist compliance.

Cullati et al., 2014	Evidence-based practices and guidelines	Micro	To examine the implementation of the Surgical Safety Checklist (SSC) among surgeons and anaesthetists working in Swiss hospitals and clinics and their perceptions of the SSC.	NA	This survey indicates that the SSC has been largely implemented in many Swiss hospitals and clinics. Both surgeons and anaesthetists perceived the SSC as a valuable tool in improving intraoperative patient safety and communication among health care professionals, with lesser importance in facilitating teamwork (and eliminating hierarchical categories). Is Switzerland keeping up? We found that 65% of respondents were already using a SSC in their hospital/clinic in the year of 2010, an encouraging result, suggesting that a majority of Swiss hospital and clinics are convinced of the importance of the SSC. At most, we observed differences between perceptions of managerial support in anaesthesia and nursing. In anaesthesia, the support was perceived as strong or very strong by more than nine out of ten respondents, while in nursing it was “only” two out of three. Most notably, we did not find significant differences between private and public healthcare institutions. This finding suggests that the SSC is perceived, overall, as a complementary tool in safety procedures rather than a duplicate.
Cullati et al., 2018	Perception of safety / Legal	Micro	Participation in wrong-site surgery may negatively influence the perception of safety by the health care professionals in the operating room (OR). The objective was to explore if perception of safety in the OR was seen as a team-based or individualist concern and whether having participated in wrong-site surgery was associated with perception of safety.	NA	The results of this exploratory study showed that most respondents endorsed a team-based perception of safety in the OR, rather than an individualistic perception. for opinion of the surgical safety checklist, which was positively associated (perception of safety as a team process increased when respondents had a positive perception of the surgical safety checklist). Our results showed that participation in itself (yes versus no), or the number of participation in wrong-site surgery during the whole clinical practice, was not related to perception of safety in the OR. Doctors' interpretation of the error may evolve over time. When the error was committed more than 3 years ago, it could evolve into positive and rational behavioral changes. The results also showed that the number of overall participation in wrong-site surgery was not associated with perception of safety in the OR.
Cullati et al., 2023	Job satisfaction	Micro	The current study investigates the prevalence of illegitimate tasks in a hospital setting and their association with patient safety culture outcomes, which has not been previously investigated.	French version of the Hospital Survey on Patient Safety Culture (HSOPSC) questionnaire version 1	The perception that illegitimate tasks, unnecessary tasks, and unreasonable tasks occurred frequently was associated with greater dissatisfaction with work, lower self-esteem, poor self-rated health, and more emotional exhaustion. No differences in this proportion (low safety rating) by profession, professional experience, managerial status, employment rate, or patient contact were observed, but a difference between hospital departments was observed. Professionals reported lower safety ratings when they were more dissatisfied with their work, had lower self-esteem, reported poor self-rated health, and were more often emotionally exhausted. Higher perceived frequency of illegitimate tasks was associated with higher odds of a low safety rating in the unit/service. with the development of evidence-based medicine, healthcare professionals need to adapt their patient care protocols to new recommendations for good clinical practice. One implication of our (and others') results is that it is important

					to sensitise leaders and managers to the concept of illegitimate tasks. This will require comprehensive interventions to optimise job design.
Ederer et al., 2019	Survey on SC / Teamwork and collaboration / Resources and training	Micro	To explore midwives' experiences with and perceptions of patient safety culture in the German-speaking countries	Non-Available	<p>The interviewed midwives provided insights into their thoughts and experiences on factors that promote and inhibit patient safety culture as well as superordinate topics related to patient safety culture in general. Their statements were assigned to seven main categories: (i) institutional circumstances, (ii) role of the management, (iii) interprofessional factors, (iv) meetings, (v) education and training, and (vi) psychosocial aspects. When analysing the individual codes in each category, it became clear that most of the statements related to one of the two overarching core categories, communication and knowledge/skills.</p> <p>It appears that patient safety culture is a personal matter for the majority of the participating midwives. However, at least at some institutions it seems that there is a discrepancy between the perceived importance of patient safety culture and an incomplete implementation into everyday work. A natural way of dealing with patient safety culture and an open blame-free discussion of critical incidences rely on the implementation of institutional circumstances that promote education, (simulation) training as well as intra- and interprofessional exchange and transparent clear responsibilities. Effective communication and teamwork are of particular importance in patient safety culture since communication issues are the leading cause of preventable adverse events. Psychological barriers include the hierarchical structure in healthcare, both intra- and interprofessional, that might inhibit people from speaking up.</p>
Eisold et Heller, 2016	Training and further education	Macro	Present variety of possible errors and the key elements to reduce them	NA	<p>The work as anaesthesiologists has never been as segmented as it is today, requiring effective communication. With each innovation and its implementation in practice, the complexity and opacity of the entire system increase, leading to more opportunities for errors. Medication errors were identified as the most significant safety-related factors, both in terms of the number of mentions and severity weighting. The root cause analysis indicated that case complexity, a low nursing staffing ratio, and high ward occupancy contributed to these errors. Hospitals previously did not receive compensation for their continuing education and training activities and consequently did not have the necessary personnel structure or teaching and learning culture. Finally, an open error culture is a hallmark of success and safety in high-risk organizations. This includes the continuously updated, nuanced interpretation of complex situations and, if necessary, a counterintuitive strong response (treatment) to weak signals by the team member with the greatest expertise in the problem area.</p>
Elfering et al., 2006	Job satisfaction	Micro	This study investigates the link between workplace stress and the 'non singularity' of patient safety-	Pocket diary	<p>Roughly 20% of all events reported were coded as being safety related. One can reasonably assume that the number of events reported altogether represents an underreporting since reporting may be associated with anxiety and shame. The non-</p>

			related incidents in the hospital setting		singularity of safety-related events is related to stressors, most notably concentration demands, and to lack of control. This study adds to the growing literature that suggests a relationship between medical error and stress. The most likely explanation lies in changes in the regulation of actions: 'secondary tasks' (such as double-checking as well as documenting) may be reduced, and actions may be carried out less attentively, resulting in reduced monitoring
Fridrich et al., 2022	Evidence-based practices and guidelines	Micro	The Surgical Safety Checklist (SSC) published by the WHO in 2009 is used as standard in surgery worldwide to reduce perioperative patient mortality. However, compliance with the SSC and quality of its application are often not satisfactory. Internal audits and feedback seem promising for improving SSC application. The purpose of this study is to investigate whether an intervention consisting of peer observation and immediate peer feedback can be implemented with high fidelity and acceptance.	Based on Check-list Usability Tool, the WHOBARS, elements of Closed Loop Communication	The acceptance of the intervention was good. The feedback was explicitly rejected only rarely, and the surgical team mostly reacted positively to the peer feedback. The programme evaluation showed that almost all responding participants considered the programme worthwhile and that the effort required for the implementation was feasible. There was also a positive tendency regarding sustainability as the majority would like to continue the programme measures. The item checks showed that the standard items at Sign In and Team Time Out are often read out by the check-list coordinator, but visual checks with another source are often neglected. Especially the Sign Out standard items are often not read out and even less often visually checked and verbally confirmed by another person than the checklist coordinator. Bringing interprofessional teams together and facilitating exchange among them emerged as a success factor.
Gambashidze et al., 2021	Survey on SC	Micro	We aimed to evaluate the influence of gender, profession, and managerial function on perceptions of PSC and on the interplay between various dimensions and perceptions of PSC.	Hospital Survey on Patient Safety Culture (HSPSC)	In this study, managerial function and profession had significant effects on perceptions of PSC. Participants' gender had very limited significant direct effect on the PSC dimensions but demonstrated considerable indirect effect through influencing profession and managerial function. Employees with managerial function reported more positive perceptions on PSC dimensions in both samples. In both samples, participants' profession had significant effect on perceptions of PSC. This is in line with other studies reporting different perceptions of physicians and nurses regarding PSC. This difference may be explained by the fact that nurses and physicians in the same team have different management structures. Similar effects have been observed for perceptions of teamwork and collaboration. A strong direct effect of participants' gender on perceptions of PSC was not observed. However, gender had significant direct effects on both profession and managerial function in both samples and consequently demonstrated significant indirect effects on the PSC dimensions.
Gehri et al., 2021	Job satisfaction	Micro	To describe health care quality by exploring hospital structures such as nurse staffing and the work environment; processes such as the	Modified version of the Practice Environment Scale of the Nursing Work Index and Safety Attitude Questionnaire	Non-applicable

			rationing of care; nurse outcomes, including job satisfaction and work-life balance; and patients' symptom burden.		
Gehring and Schwappach, 2012	Survey on SC	Micro	This study examined which risks are perceived as particularly frequent and relevant by primary care providers and how the safety climate is perceived by doctors and Medical Practice Assistants (MPAs) in general practices.	NA	Errors and critical events occur in the context of technological, situational, and individual factors and processes. However, the working environment of primary care providers differs significantly from that of their hospital counterparts. For instance, general practitioners often work in small teams where members may be in an employee-employer relationship. Many processes and workflows in practices are also influenced by collaboration with external entities. Errors in triage during patient contact, errors in diagnosis, in the medication process, in the practice.
Gehring et Schwappach, 2014	Survey on SC	Micro	Until now, there have been no systematic data on critical incidents and safety climate from the Swiss primary care system. For this reason, a survey of physicians and medical practice assistants (MPAs) in German-speaking Swiss general practices was conducted, along with a follow-up project specifically focused on telephone triage.	NA	MPAs were less likely than doctors to agree that there was regular training in the most common emergency situations in their practice. MPAs also rated the situation in practices more negatively in terms of whether errors are discussed in the practice team and whether patients are asked about their current medication and side effects when they visit the practice. In the dimension of the safety climate 'team-based activities and strategies to prevent errors', differences were found according to professional group and type of practice. However, regular participation in quality circles and team meetings for all practice staff (at least monthly) were reported as the factors with the greatest influence on the safety climate. In terms of risks, the results of this study show that telephone triage is a relevant area of patient safety in primary care that has not been focused on, which has led to a new project and a triage guide for telephone triage in primary care offices.
Gehring et al, 2013	Survey on SC	Micro	To assess differences in safety climate perceptions between occupational groups and types of office organization in primary care.	Adapted from the SAQ (ambulatory office version), the PC-QUEST and the FRASIK (Frankfurt Patient Safety Climate Questionnaire)	Significant differences between occupational groups were observed in the means of the 'team-based error prevention'. Items in this scale represent procedures and standards in the office that support a shared understanding of all team members regarding office processes on safety. Favourable scores on the team-based error prevention dimension were significantly determined by predictors on the individual level, the office level as well as the affiliated network level. The largest fraction of variance in 'team-based error prevention'-scores can be attributed to non-individual characteristics, namely the type of medical office, practice procedures. The effect of network association can in part be explained by the obligations these networks place on associated physicians in terms of quality management and certification. The results suggest that primary care offices can benefit from regular team meetings involving nurses and physicians and from rather frequent participation in quality circles.

Gehring et al., 2015	Survey on SC	Micro	Safety climate measurements are a broadly used element of improvement initiatives. In order to provide a sound and easy-to-administer instrument for the use in Swiss hospitals, we translated the Safety Climate Survey into German and French.	Safety Climate Survey	<p>The mean value of the Safety Climate Survey was 3.8 (SD = 0.53). At item level means ranged from 3.18 to 4.38. Comparing the mean scores at item level showed that items referring to the institutional level/hospital leadership were rated more negatively than items referring to the safety climate in the individual's work area.</p> <p>Nearly 12% of the HCPs reported a 'problematic safety climate' (PPR (percentage of 'problematic response') 11.75%). At item level, 14 out of 21 items showed a PPR higher than 10%, and two items returned a PPR higher than 20% ('Management/leadership does not knowingly compromise safety concerns for productivity', 'I believe that most adverse events occur as a result of multiple system failures and are not attributable to one individual's action'). Group differences were analysed at the scale level and showed significant differences according to profession, managerial function, work area and time spent in direct patient care. Physicians rated the safety climate more positively than nurses, staff with a managerial role rated the safety climate more positively than staff without a managerial role, staff working in the operating room reported a more positive safety climate than staff working on the ward, and the ratings differed according to the time spent by HCPs in direct patient care.</p>
Guillod, 2013	Legal	Macro	NA	NA	<p>In the field of patient safety, the law must refer to values such as transparency, verity, trust and justice. It is a way to gain wide societal (and professional) acceptance, itself a prerequisite for an efficient implementation of the law. Therefore, applied research on patient safety is a vital component of a comprehensive strategy to address this problem. Combined efforts should therefore be made at the political-legal, educational and institutional levels. Health service organisations should create an environment in which all staff are: encouraged and able to recognise and report adverse events prepared through training and education to participate in open disclosure supported through the open disclosure process. Laws promoting patient safety will have to strike a delicate balance between competing interests in order to create the right incentives while safeguarding the legal protection of patients.</p>
Haller et al., 2008	Evidence-based practices and guidelines	Micro	To assess the effect of a Crew Resource Management (CRM) intervention specifically designed to improve teamwork and communication skills in a multidisciplinary obstetrical setting	Standardized questionnaire developed by the Hospital training centre	<p>The findings of this study suggest a need to improve the patient safety climate on many units in Swiss hospitals. Leaders in hospitals should strengthen the patient safety climate at unit level by implementing methods, such as root cause analysis or patient safety leadership walk rounds, to improve individual and team skills and redesign work processes.</p>
Heckemann et al., 2019	Job satisfaction	Micro	This study investigates nurse managers' perception of organisational safety culture and team efficacy in managing patient	NA (developed within the study: The 86-item survey in the German language was comprised of psychometrically evaluated tools	<p>Nurse managers' perception of team efficacy is on average four times more likely when the physical care environment is considered. A calm, tidy and safe physical environment is known to play a role in reducing patient-visitor aggression (PVA). A shared organisational culture is important, because it helps people to understand and interpret</p>

			and visitor aggression, and determines the predictors of team efficacy	and items generated through a preparatory interview study	situations or events in very similar ways. This then enables staff to engage in a commonly accepted course of action. A lived (as opposed to an espoused) shared attitude manifests itself in actions and strategies that show a commitment to combatting PVA across the organisation. Training in psychiatry, however, appeared to be embedded in an overall strategy, which often included an official definition, allocation of financial resources, availability of staff support and official reporting systems. In contrast, general hospitals appeared to be less congruent in addressing PVA in their overall strategies, because a number of factors relevant to a positive organisational safety culture regarding PVA, such as the allocation of financial resources or an official definition, were neglected in this setting. These results explain why managers in psychiatric hospitals (37%) perceived the shared attitude towards addressing PVA to be mostly positive, in comparison to managers in general hospitals (65%).
Heckemann et al., 2020	Leadership / Job satisfaction	Micro	To explore the perception and issues regarding the ability of nursing teams to manage patient and visitor aggression in clinical practice, from ward managers' perspectives. (PVA = Physical and Verbal Agression)	NA	Managing patient and visitor aggression is a challenge for nurse managers. A team's ability to prevent, de-escalate and debrief after PVA incidents is an important leadership task in which ward managers are neither supported in nor trained for within their organisations. The nurse managers' descriptions of the organisational safety cultures against PVA highlighted differences in the organisational approaches to PVA in terms of availability of training, availability and implementation of policies, guidelines and reporting procedures, as well as the overall attitude towards addressing PVA. Patient care should be adapted to patients' needs, and this should be discussed within the multidisciplinary team early in the treatment episode. The patient's biography should also be considered, because it provides important and early indications of potential problems (e.g. addiction and mental illness). The ward managers described what they would need to improve the prevention and management of PVA. Their needs were mainly linked to a lack of organisational support. They wished that senior management would recognise the challenge that PVA presented to nursing teams. Contextual factors are an important part of the organisational safety culture. They include an overall tangible, supportive attitude towards the prevention and management of PVA within healthcare organisations.
Jossen et al., 2019	Survey on SC / Methodology	Micro	Safe practice and safety culture are important issues in outpatient diagnostic imaging services. As questionnaires assessing safety culture through the measurement of safety climate in this setting are not yet available, the present study aimed	SafeQuest	Analysis for the entire sample revealed the highest scores for agreement with the statements: "The quality and safety of patient care in the service is taken seriously" (mean of 6.0 on a seven-point Likert scale); "The service is a good place to work" (mean score 5.9), and disagreement with the statement "Collaborators frequently disregard rules, protocols and procedures" (mean score 5.9). The overall results to positive response rates were very high for the items "The quality and safety of patient care in the service is taken seriously", (84%), "Collaborators frequently disregard rules, protocols and procedures", (84%) and "The service is a good place to work" (85%) with

			to develop and validate such an instrument.		only the item "Collaborators treat each other with respect" scoring higher with 86% positive responses. In contrast to that, the statements "The service leadership communicates its long-term plans for the development of the service", "Collaborators always have enough time to complete work tasks safely" and "The opinions of all concerned collaborators are taken into account for the development of processes" scored lowest, with an overall result of 4.2 on a seven-point Likert scale, and also scored lowest for the positive response rates, with 46% for the item asking about participation in development processes and 48% for the two other items. The total mean score for the overall sample was 5.0, however safety climate scores varied significantly between services.
Kaderli et al., 2013	Evidence-based practices and guidelines	Micro	We sought to evaluate potential reasons given by board-certified doctors for the persistence of adverse events despite efforts to improve patient safety in Switzerland.	NA	The definition of the roles and responsibilities of the team members is a prerequisite to guarantee user commitment to a checklist. the persistence of adverse events depends on individual factors, such as "lack of discipline", "experience", and "strain" and, mainly in high-volume clinics, on "group-related and interactional" factors. Labour conditions can be optimised to minimise interface problems in case of cross-coverings of patients, guarantee support for students, residents and interns and reduce strain. Advantages of introducing and implementing surgical safety checklists outweigh disadvantages. Checklists are helpful on an "organisational level" and to clearly assign responsibilities. However, it is crucial to consider disadvantages: especially compliance (including "acceptance", "commitment") and "effort". To improve the willingness to implement checklists, an adaptation to the organisation and size of the hospital by a consensus among all members of the team is a prerequisite. Role models might be helpful, especially in general surgery and specialised disciplines.
Klimmeck et al., 2021	Teamwork / Evidence-based practices and guidelines	Micro	This observational, multiple-case study examined the patient safety practices of HCWs, as well as the safety and teamwork climate, before and after conducting WRs in a university hospital in Switzerland.	Patient Safety Observation Protocol (PSOP) - refined for the current study by incorporating patient safety themes from literature and refining them through pilot testing: The final PSOP was composed of 33 items on six patient safety dimensions Unit Patient Safety Questionnaire (UPSQ): consisting of the safety and teamwork climate scales (13 items) from the Safety Attitudes Questionnaire (SAQ) - to explore	The communication dimension, with interactions between HCW and HCW and patients, respectively, was observed as positive, given that the majority of the safety requirements were fully met. Preexisting communication tools such as team huddles and reports were regularly used by the work settings, which may have led to the positive result. Requirements were not fully met in nearly half of the observations in the dimension of "infection prevention." This safety dimension also corresponded with the highest number of planned action items to address safe care deficits. This was not surprising, as infection-related AEs are quite common and reflect a constant challenge in terms of adherence to hand hygiene protocols. 70% of the surveyed HCWs assessed the safety climate as good, we observed differences in safety and teamwork climate outcomes between work settings. The work settings with the highest safety climate scores as well as 60% or higher response rates also showed higher percent- ages in overall patient safety grades. This seems to fit with workplace conditions showing

				safety climate 7 items from the SAQ were included	attributes of psychological safety and communication openness of HCWs relative to work settings with the lowest safety climate scores.
Klingberg et al., 2018	Job satisfaction	Micro	Negative workplace behaviour, especially negative communication is a recognised problem in many organisations and is known to have serious impact on workplace performance, productivity and personal wellbeing. Emergency Departments (ED) can be high stress environments in which communication and perceptions of respect between physicians and other staff may underlie individual functioning. We conducted a study to estimate the influence of incivility (ICV) among physicians in the ED.	Self-developed survey (3 focus groups)	The incidence of incivility was high among the ED physicians. Although this was a small sample, the association between workplace ICV and psychological safety, personal irritation as well personal comfort suggests that ICV may be an important variable underlying ED team performance. These findings further underscore the need to foster a culture of respect and good communication between departments, as levels of ICV were highest with physicians from outside the ED. Participants reported stress relation, power demonstration and denying liability as the most relevant reasons for ICV . These items reflect interpersonal and individual levels of interpretation by the receptionist.
Mankaka et al., 2014	Resources and training	Micro	In the present study, we sought to qualitatively explore the experience of female residents with respect to medical errors. In particular, we explored the coping mechanisms displayed after an error. This study took place in the internal medicine department of a Swiss university hospital.	NA	This study offers an in-depth account of how female residents specifically experience and cope with medical errors. Our interviews with female residents convey the sense that gender possibly influences the experience with errors, including the kind of coping mechanisms displayed. Among the perceived causes of errors, three were predominant in participants' accounts: (a) stress and time pressure linked to work overload, (b) fatigue, and (c) inadequate supervision or inadequate level of clinical competence in relation to the tasks. errors will remain a major threat to our patients and our health care system. Errors will also remain a strain on the doctors themselves, which was confirmed by the level of psychological distress that affected our participants. The finding of perceived sexism in relation to errors aligns with other evidence supporting the persistence of genderbased discrimination in medicine. This takes place within a professional culture that has a long way to go before errors can be addressed openly and constructively. In addition, gender-based discrimination can occur, thereby worsening this already painful experience.
Mascherek et al., 2016	Evidence-based practices and guidelines	Micro	The aims of the implementation program were to implement comprehensive and correct checklist use in participating hospitals in every patient and in every surgical procedure and to improve safety	Safety Climate Survey	The largest differences emerged for frequency of checklist use, familiarity, and knowledge. These variables directly reflect a changed routine of checklist use. Staff of participating hospitals was explicitly educated about objectives and aims of the checklist. Also, checklist use was made mandatory in the treatment of all patients undergoing surgery during the study period. While significant effects for norms and intentions emerged, no significant differences were observed in acceptance and

			climate and teamwork as important cultural context variables. This study examines the outcomes		attitude. Effects that were found were of small to medium size. It seems reasonable that every-day-checklist-use, education of staff and changed hospital policies strengthened norms perceived by staff. At least superficially, not using the checklist in surgery is more and more perceived as unprofessional behaviour. Impact of the program mainly affected behavioural aspects and knowledge of checklist use on daily basis. One may conclude that the main difference after the program was the shift from “theory to practice”. A second aim of the quality improvement study was to improve overall safety climate and teamwork during checklist implementation and use. Although significant differences emerged, effect sizes were very small. As sample size was large, the differences found in the present study must be interpreted as being of little practical relevance. The strongest effects were seen in aspects concerning behaviour and knowledge specifically related to checklist use. Less impact was achieved on general cultural variables safety climate and teamwork: (Significant differences for safety climate and teamwork emerged in the present study, However, although statistical significance was reached, effects are very small)
Mascherek et al., 2017	Evidence-based practices and guidelines	Micro	Safety Climate has been acknowledged as an unspecific factor influencing patient safety. However, studies rarely provide in-depth analysis of climate data. As a helpful approach, the concept of climate strength has been proposed. In the present study we tested the hypotheses that even if safety climate remains stable on mean-level across time, differences might be evident in strength or shape.	Safety Climate Survey	The present study illustrated that taking several measures into account and describing safety climate from different perspectives is necessary in order to fully understand differences and trends within groups and to develop interventions addressing the needs of different groups more precisely. hospitals. We believe that the present study illustrated the added value that is provided by the analyses of safety climate profiles instead of single measures. Taking several measures into account that describe safety climate from different perspectives is necessary in order to fully understand differences and trends within groups.
Niederhauser et Schwappach, 2021	Open communication	Micro	Patient safety incidents may be prevented if healthcare workers speak up to voice their concerns when they observe hazardous clinical situations. This study aims to investigate the frequency of speaking up and healthcare workers' perception of organizational climate in rehabilitation clinics.	SUPQ-Q	Healthcare workers in rehabilitation clinics frequently perceive safety concerns. The study underlines the importance of promoting a culture of safety and speaking up. The short survey instrument SUPS-Q can be used by rehabilitation clinics to initiate discussions related to facilitators and barriers to speaking up and to identify areas for improvement within the organization. Nurses speak up more frequently, but they also decide to remain silent more often than physicians. Qualitative studies suggest that nurses may be hesitant to speak up due to perceived lack of support, instances of being ignored, and experiences of being disrespected. The feeling of resignation can foster withholding voice. we found that HCWs frequently caring for patients requiring acute

					medical care had higher frequencies of safety concerns, speaking up and withholding voice, and less positive climate scores than their colleagues.
Perneger et al., 2013	Survey on SC / Methodology	Micro	To assess the psychometric properties of the French-language version of the Hospital Survey on Patient Safety Culture (HSOPSC).	HSOPSC	Among the respondents, 5.3% (N=60) gave their work unit a global safety grade of 'excellent', 46.9% (N=530) said 'very good', 39.2% (N=443) said 'acceptable', 3.7% (N=42) said 'poor' and 4.8% (N=54) said 'failing'. The majority (61.1%, N=690) of respondents had not reported any event related to patient safety in the previous year; 25.0% (N=282) reported 1 or 2 events, 8.5% (N=96) reported 3–5 events, 3.4% (N=38) reported 6–10 events and 2.1% (N=23) reported 11 or more events. The mean percentage of positive responses ranged from 28.1% (hospital management support) to 79.4% (teamwork within hospital units) (table 2). When the scores were computed as simple means on a scale from 1 to 5, the pattern of the averages was similar. The summary scores obtained by the two computation methods from the same items were highly correlated: the Pearson correlation coefficients ranged from 0.82 (hospital management support) to 0.90 (feedback and communication about error). Missing score values were low for all scales except frequency of event reporting, for which 11% of respondents had missing values. For most scores, a greater proportion of variance was attributable to activity sectors (within hospital sites) than to hospital sites (table 2). The dimensions that had the highest levels of agreement within activity sectors were staffing (17.1% of variance) and overall perception of safety (14.2%).
Pfeiffer et al., 2013	Leadership / Evidence-based practices and guidelines	Micro	Underreporting is a major issue when using incident reporting systems to improve safety in hospitals. Based on a psychological framework, this study investigated the motivational antecedents of the willingness to report into incident reporting systems in healthcare. Individual, organisational and system-related influences on the willingness to report incidents were investigated in a survey of physicians and nurses from five Swiss hospitals.	NA	Implications are discussed that open up alternatives for the design and implementation of incident reporting systems in healthcare. For example, the results of the study point to opportunities for making incident reporting systems more transparent and participatory and to allow for experience of how they actually improve patient safety. Multigroup analysis revealed that the motivational antecedents differ between professional groups in some aspects. The perceived effectiveness of reporting was significantly influenced by the transparency of the reporting procedure and the role identity for nurses but not for physicians.
Pfeiffer et al., 2023	Safety climate	Micro	To identify associations between subjective norms toward, commitment to, as well as knowledge about prevention measures and safety climate level and strength,	The Safety Climate Scale of the Safety Attitudes Questionnaire	Our study shows that a subjective norms, the perceived expectation of relevant coworkers to perform the prevention measures, was significantly associated with safety climate, indicating that a positive safety culture may be closely related to the perceived social pressure to perform specific safety relevant infection prevention measures and (b) that being committed to perform preventative measures in the face of competing

			taking into account professional background and number of responses per hospital.		situational demands also was associated with safety climate. In contrast, interestingly, being knowledgeable about these specific practices seemed not to be associated with safety climate ratings. These associations indicate that there is a relationship between the rather general assessments of safety climate with perceptions evaluating the more specific safety relevant behaviours. Strong norms can coexist with either highly coherent or less coherent safety climate perceptions among employees. Accordingly, commitment was not significantly associated with safety climate strength. Professional background was a significant predictor for safety climate strength, with the higher the proportion of nurses, the lower the safety climate strength. Knowledge about prevention measures was not associated with safety climate level and strength on hospital level.
Pfeiffer et al., 2023	Safety climate	Micro	The aim of this study was to investigate the association between surgical site infections (SSIs), a major source of patient harm, and safety and teamwork climate. Prior research has been unclear regarding this relationship.	The Safety Attitudes Questionnaire (SAQ) - (the safety climate (SCS, 22 items) and teamwork climate scales (TWC, 6 items) were used)	This study suggests a possible negative correlation between climate level and SSI (Surgical Site Infections) rate, while for climate strength, no associations were found. Future research should study safety climate more specifically related to infection prevention measures to establish clearer links. This study did not empirically support the expected associations between safety and teamwork climate among Swiss OR personnel and SSI rates in a strong way. Having a managerial role or being a physician had a positive influence on climate levels for two surgery types. This result is in line with earlier research indicating that persons with managing roles have a more positive view on safety climate, and with reports of physicians evaluating safety climate more optimistically than nurses, although that difference is not as clear as for managerial roles
Richard et al., 2021	Open communication / Methodology	Micro	The aim of the study was to develop a questionnaire allowing HCOs to systematically assess dimensions of both frequencies of speak up behaviors and speak up–related climate. We differentiate between self-reports that are behaviour oriented, that is, assessing the frequency of specific speaking up behaviours and self-reports that are climate oriented, that is, assessing the subjective perception of work and organizational aspects that are relevant for speaking up. We intended to develop a survey instrument that would be short and easy to self-administer as baseline or follow-up	NA (developed within the study: Six of the 13 items were adapted from the speak up climate safety scale, Further items were included from a questionnaire assessing psychological safety	Patient safety concerns, speaking up, and withholding voice were frequently reported. With this questionnaire, we present a tool to systematically assess and evaluate important aspects of speaking up in HCOs. This allows for identifying areas for improvement, and because it is a short survey, to monitor changes in speaking up—for example, before and after an improvement project.

			assessment, applicable to both doctors and nurses, and easy to use and interpret by HCOs.		
Ricklin et al., 2019	Survey on SC / Just culture / Teamwork and collaboration	Micro	Considering the sparsity of studies addressing patient safety culture in Europe and Switzerland, the aim of the present study was to assess patient safety culture in the emergency department of a University Hospital in Switzerland.	Hospital Survey on Patient Safety Culture	<p>The three composites with the highest average percent positive responses were “nonpunitive response to errors” with 78.7% positive answers, “teamwork within units” with 70.1% positive answers and “supervisor/manager expectations and actions promoting patient safety” with 67.9%. The three composites with the lowest average percent positive responses were “frequency of events reported” with 37.8% of positive answers, “teamwork across units” with 46.88% and “handoffs and transitions” with 47.4% positive responses. After the educational intervention, a second identical survey was distributed to assess, if patient safety culture improved. Using at-test we did not find any significant differences between the two time points. After the intervention, the positive response for “management support”, “staffing” and “organizational learning” increased by 11.8%, 10.2% and 6.7%, respectively. Nevertheless, positive perception of “supervisor expectations & actions” and “feedback & communication” decreased by 15% and 12%.</p> <p>The fact that “nonpunitive response to errors” received a very high percentage of positive answers (78.7%) is a compliment to the leadership concerning their error-culture. In fact, the most important factor considered to improve patient safety culture has been reported to be an organizational culture that encourages reporting without blaming, and one which promotes communication between health care practitioners. The high rating for “nonpunitive response to errors” combined with the relatively low “frequency of events reported” is thus rather surprising. The first should stimulate the latter. For the UNZ areas important for improving are the reporting of adverse events, handoffs and transition and the teamwork across units.</p>
Schubert et al., 2013	Job satisfaction	Micro	To describe the levels of implicit rationing of nursing care in Swiss acute care hospitals; to explore the associations between nine selected potential rationing predictors and implicit rationing of nursing care.	Climate was measured with the nine-item Safety Organizing Scale (SOS)	Confirming the hypothesized relationship between hospital safety climate/culture and rationing, patient safety climate, aggregated at the hospital level, was the second factor significantly associated with rationing. However, considering that the SOS reflects patient safety climate at the unit level it was somewhat surprising to find a significant association at the hospital level instead. One possible explanation might be the small variability in safety climate levels among units within the same hospitals. However, as this is the first known case of a significant association between safety climate and rationing, it requires further exploration.
Schwappach & Gehring, 2014	Open communication	Micro	Research suggests that “silence”, i.e., not voicing safety concerns, is common among health care professionals (HCPs). Speaking up	NA	Participants reported many situations in which they felt comfortable to voice their safety concerns towards coworkers and supervisors. However, episodes of remaining silent were a common experience among staff and were reported by all professions and hierarchical levels. The fundamental motivation for speaking up was to protect

			about patient safety is vital to avoid errors reaching the patient and thus to prevent harm and also to improve a culture of teamwork and safety. The aim of our study was to explore factors that affect oncology staff's decision to voice safety concerns or to remain silent and to describe the trade-offs they make.		individual, identifiable patients from harm. While doctors and nurses felt strong obligation to prevent errors and safety violations reaching the patient, they were not engaged in voicing concerns beyond this immediacy. Even if a clinical error cannot be prevented from reaching an individual patient, speaking up post-hoc would be important to avoid the error recurring and to open opportunities for learning and changing behaviour. Staff reported various barriers for voicing concerns and weighted anticipated benefits against negative outcomes, e.g., damaged relationships or humiliation of a co-worker. It is concerning that nurses and doctors believe that they are able, to accurately estimate the risks associated with a specific behaviour in a specific patient. This "relative" interpretation of safety rules caused dissonance in some oncology nurses and resulted in feelings of resignation and futility often termed as "acquiescent silence" in the organizational silence literature. We suggest that nurses and residents need to be encouraged by unit leaders to defend these safety rules.
Schwappach et al., 2011	Patient engagement	Micro	Patients' reports of safety-related events and perceptions of safety can be a valuable source for hospitals. Patients of eight acute care hospitals in Switzerland were surveyed for safety-related events and concerns for safety. In workshops with hospitals areas for improvement were analysed and priorities for change identified. To evaluate the benefit of the approach, semi-structured interviews were conducted with hospital risk managers.	NA	Patients: 21.4% of patients reported at least one definite, and 29.1% reported at least one definite or possible event. The mean number of 'definite' events per patient was 0.31 (95% CI = 0.29-0.34). Of the 1,160 patients who reported at least one event, 11.7% rated this event as serious (2.9% of all patients). 25.3% of patients' who experienced any event talked to health care staff about this event, 11.6% reported no communication and the remaining answered that talking to staff about the event was not necessary. Patients that had communicated with staff rated this communication as very or rather honest and open in 92.0%. 3.2% of patients were very concerned and 14.7% were somewhat concerned about medical errors and safety.
Schwappach et al., 2011	Perception of patient safety	Micro	To assess patients' and healthcare workers' (hew) attitudes and experiences with a patient safety advisory, to investigate predictors for patients' safety-related behaviours and determinants for staff support for the advisory.	NA	We found strong positive attitudes towards the patients' involvement in prevention of medical errors among patients and can extend this evidence further to healthcare staff. While the majority of hew were supportive of engaging patients for their safety, the level of support was lower as compared with patients. This may reflect safety climate, e.g. a general reluctance to communicate openly about errors and safety, or, towards patients. Ambivalence among hew towards approaches that foster patient engagement, however, is not surprising since unfamiliar or difficult situations can indeed arise. The newly developed booklet received very positive ratings, in particular in terms of comprehensibility, and was well accepted by patients and staff. A considerable fraction of patients reported changes in knowledge, vigilance and behaviour. Many patients applied the recommendations and nearly one-third believed that errors were in fact

					prevented using the booklet. Most of all patients identified a personalized instruction, i.e. being personally instructed by staff and motivated to speak up rather as just being given the booklet, as a key component to overcome these barriers. Our results suggest that patients are prepared to engage for their safety. Providing patients with a suitable, sensitively balanced educational material that is well accepted by patients and staff is an important initial step to foster motivation.
Schwappach et Niederhauser, 2019	Open communication	Micro	Examine speak up related behaviour and climate in psychiatric hospitals	SUPS-Q survey (For its use in psychiatric hospitals, some adaptations were made to the SUPS-Q)	Speaking up to prevent harm to patients should be promoted as an important safety measure. Psychological safety, person's belief to voice interpersonal risks without being punished or misunderstood is an important prerequisite for speaking up. Personal assessment of harm and hierarchical level is a strong predictor for speaking up. Lower frequencies of speaking up in the low-level hierarchy. Power dynamics inhibits the decision to speak up. Difference between categories: nurses speak up but also are the ones who remains silents due to not perceiving a strong encouraging environment to speak up. Psychologists also did not perceive this environment and are the least group to speak up, aware of potential risks.
Schwappach et Pfeiffer, 2023	Medication errors	Micro	Retained foreign objects (RFO) after surgery are rare, serious patient safety events. In international comparisons based on routine data, Switzerland had remarkably high RFO rates. The objectives of this study were to 1) explore national key stakeholders' views on RFO as a safety problem, its preventability and need for action in Switzerland; and 2) to assess their interpretation of Switzerland's RFO incidence compared to other countries.	NA	RFOs were currently not perceived as a patient safety priority on the national level and most experts believed that Switzerland would have at least average performance in RFO rates compared to other countries. The international data were largely unknown to the experts, and it is surprising that the regular publication of comparative RFO incidences with Switzerland taking a concerning position went unrecognized despite some uptake by the public media. stronger patient safety culture rather than worse care". However, differences in RFO coding in routine hospital data can only be partly attributable to safety culture. As RFO incidence data is based on routine hospital data coded for billing purposes, it is probably more affected by economic incentives and disincentives to code these events.
Schwappach et Richard, 2018	Open communication	Micro	The main aim of our study was thus to examine the relationship between HCWs safety-related speaking up behaviours and speak up-related climate, discriminating between voicing and withholding concerns. In a first step, we assessed the frequencies of safety-related voicing behaviours withholding voice and	Selected survey items of the Speaking Up about Patient Safety Questionnaire SUPS-Q	Our results strengthen the importance of a speak up-supportive safety climate for staff safety-related communication behaviours, specifically withholding voice. This study indicates that a poor climate, in particular high levels of resignation among HCWs, is linked to frequent 'silence' of HCWs but not inversely associated with frequent speaking up. The results reveal a strong and positive association of the frequencies of perceived concerns with both speaking up and withholding voice. On the individual level, the overall speak up-related safety climate was strongly associated with lower frequencies of withholding voice, but not with higher frequencies of speaking up, which indicates that, indeed, these two behaviours are independent of each other. Interindividual

			speaking up. Second, we studied the associations of speak up-related climate with speaking up and withholding voice behaviours.		processes of evaluating benefits and costs may differ for speaking up and withholding voice. Our results suggest that the speak up-related climate affects these trade-offs. A positive speaking up-related climate perceived by the individual decreased decisions to remain silent, irrespective of perceptions shared by staff at the hospital level. A strong encouraging environment was positively associated with speaking up, as expected. However, contrary to the expectations, higher levels of psychological safety decreased the frequency of speaking up and were not significantly related to withholding voice. The study confirms associations of clinical function, and thus hierarchy, with both types of voicing behaviours. We observed that nursing experts were more likely to speak up and less likely to withhold their voice compared with other professional groups. Nursing experts might be more aware of existing standards and guidelines, which may foster their speaking up behaviour. In their function as nursing experts, they probably also are more sensitive towards possible threats and rule violations and more used to provide feedback to other nurses. Our results highlight that resignation— negative experiences with or ineffectiveness of past speaking up episodes—is strongly related to withholding voice or ‘silencing’ staff.
Schwappach et Wernli, 2010	Patient engagement	Micro	To assess chemotherapy patients’ perceptions of safety and their attitudes towards participating in error-prevention strategies.	NA	Patients are prepared to engage in their safety, but the encouragement by staff is vital. Involvement of patients with cancer in medication administration safety needs to acknowledge patients’ conceptions of these activities and their varying abilities at different stages in the treatment process. of risk and degree of worry. Compared with actual figures, patients tended to underestimate the risk of error and potential for harm. The relative frequency of errors with the potential to cause harm is even higher than with other treatments. Patients’ low degree of worry is surprising given the widespread conception of chemotherapy as being highly toxic and hazardous, and the cultural meanings assigned to this cancer treatment. At the follow-up interviews, concerns about safety had increased, and patients reported a higher degree of vigilance and adopted some of the behaviours described to them at baseline.
Schwappach, 2016	Leadership / Open communication	Micro	Open and direct communication („speaking-up“) about errors, bypassed safety rules and risky behaviours among hospital staff is required to avoid patient harm and is an essential characteristic of an established safety culture. In German-speaking countries, little is known about speaking-up behaviours among	Self-developed questionnaire (with 32 interviews)	HCP (healthcare professionals) in hospital frequently experience safety concerns and often withhold them. An important resource for better patient safety is lost. The development of interventions to improve speaking-up culture is warranted. Many staff members hold back these concerns, doubts, questions, worries, but also suggestions for improvement, and do not raise them in their departments. This results in the loss of an extremely important potential for the prevention of harm and systematic progress in patient safety.

			health care professionals (HCP) in hospitals.		
Schwendimann et al., 2012	Survey on SC	Micro	The purpose of this study was to explore the variability in safety culture dimensions within and between Swiss and US clinical areas	The Safety Attitudes Questionnaire (SAQ-Short Form)	<p>The mean scale score values for three of the six SAQ dimensions were significantly different between the US and Swiss hospital units, respectively (stress recognition: 57.3; 31.4, perceptions of unit management: 60.1; 41.5, and safety climate: 68.7; 58.4), whereas, teamwork climate, job satisfaction and working conditions were not significantly different Item-level analysis revealed more insights. First, the stress recognition dimension showed most between-country differences attributable to the items: 'When my workload becomes excessive, my performance is impaired' (USA: 76.7, CH (51.1; $p<0.001$) and "I am less effective at work when fatigued" (USA: 78.0, CH: 60.9; $p<0.001$). Second, for the perceptions of unit management dimension, the item 'Management supports my daily efforts' attributed most to the between-country difference (USA: 78.8, CH: 64.9; $p=0.005$). Third, for the safety climate dimension it includes the items 'In this clinical area, it is difficult to discuss errors' (USA: 19.8, CH: 7.8; $p<0.001$) and "I receive appropriate feedback about my performance" (USA: 78.0, CH: 62.9; $p<0.001$).</p> <p>Despite some country-level variability, it is clinical area membership that is the more potent level for capturing respondent variance in dimensions of safety culture. Moreover, the two most researched and published safety culture dimensions, teamwork climate and safety climate, were excellent examples of dimensions that may vary at the country level, but that variability might be dwarfed by the variance captured at the clinical area level. Our results suggest that a deliberate focus on the assessment and improvement of patient safety and quality at the unit or clinical area level is empirically sound and opens a diverse set of potential interventions from different countries to be considered across countries while maintaining an emphasis on the critical importance of targeting the clinical area level.</p>
Schwendimann et al., 2013	Protocol Scoping review	Micro	To explore the relationships among various nursing homes characteristics including work environment, careworker outcomes and resident outcomes in Swiss nursing homes.	NA	The study results will contribute to a comprehensive understanding of the interrelationships between key organizational factors and resident/ care worker outcomes and will also support planning and conducting interventions to improve quality of care concerning organizational factors affecting care workers in daily practice.
Schwendimann et al., 2016	Job satisfaction	Micro	The purpose of this study was to describe job satisfaction among care workers in Swiss nursing homes and to examine its associations with work environment factors, work stressors, and health issues.	NA	Strong job satisfaction was significantly associated with higher ratings for supportive leadership, teamwork and safety climate, resonant nursing home administrators, and adequate staffing resources, and with lower ratings for workplace conflict and health complaints. Staffing adequacy ratings reflected workers' personal senses of whether their units' staff counts and skill mixes were sufficient to perform all necessary work while maintaining high care quality. Significantly linked to job satisfaction, staffing

					adequacy included care workers' perceptions of whether they had the time and the opportunity to discuss resident care problems.
Schwendimann et al., 2019	Evidence-based practices and guidelines	Micro	The World Health Organization (WHO) Surgical Safety Checklist is used globally to ensure patient safety during surgery. Two years after its implementation in the University Hospital Basel's operating rooms, adherence to the protocol was evaluated.	NA	The study illustrates factors, which foster and hinder consistent application of the WHO surgical safety checklist namely individual, procedural and contextual. It also demonstrates that the TTO was consistently and correctly applied, while the unavailability of key OR team members at sign-out time was the most common reason for omission or incomplete use of the TSO.
Seppey et al., 2020	Evidence-based practices and guidelines	Micro	To compare the compliance of the Surgical Safety Checklist in two groups of users: early (Group A) and late (Group B) adopters, and to detect change over time.	NA	While early adopters maintain a high level of compliance to the SSC, late adopters still improve their compliance during the first year of SSC use, hinting at a time of adaptation to the checklist. However, consulting surgeons show a significantly lower compliance than internally employed surgeons. For an SSC to be properly performed it is not enough to tick boxes, one should pause, speak to each other, listen and work as a team, communication being an important factor reducing patient morbidity.
Staines et al., 2020	Evidence-based practices and guidelines	Micro	To assess the impact of implementation of the TeamSTEPPS teamwork improvement concept on patient safety culture.	Hospital Survey on Patient Safety Culture (HSOPSC)	After implementing the TeamSTEPPS teamwork concept, patient safety culture significantly improved for three of twelve dimensions in the intervention group. When controlling for differences in baseline scores between implementation and control wards, a significant improvement remains in one dimension. This suggests that TeamSTEPPS could be considered when seeking to enhance patient safety culture, especially in high-risk environments such as maternity wards. The impact of the implementation of TeamSTEPPS seems uneven across the twelve dimensions of the Patient Safety Culture survey. The review of these studies about the impact of TeamSTEPPS on Patient Safety Culture shows that the dimension 'Nonpunitive Response to Errors' seems to often be amongst the most impacted, followed by 'Teamwork within Units'.
Stocker et al., 2021	Open communication / Evidence-based practices and guidelines	Micro	Morbidity and mortality conferences (MMC) are well established but little data exists on inter-professional aspects, system-based outcomes and characteristics in pediatric departments. Our study aim was to analyze the system-based impact and to assess participant's perspectives on	NA	An inter-professional MMC can have relevant impact on clinical practice and affect system-based changes. Inter-professional conferences are profitable for all participants but evaluated differently according to profession. A standardized format and the presence of a moderator are helpful, but not a guarantee for a no-blame culture. Highly emotional cases are a risk factor to relapse to "blame and shame". A time gap between the event and the MMC may have a beneficial effect. The presence of a moderator was overall agreed to be important and had the highest score by members of the nursing staff and "physicians of other specialties". The moderator should balance the tendency for outspoken individuals to dominate the rhetoric and encourage cautious participants.

			standardized, inter-professional MMCs in a children's hospital.		
Stühlinger et al., 2019	Job satisfaction	Micro	Examine if a shared language in interprofessional healthcare teams is associated with better relational coordination and if both are connected to higher quality of care as well as job satisfaction of the staff.	NA	We found evidence for a serial mediation of these relationships by relational coordination and psychological safety. We found a positive relationship of shared language with quality of care and job satisfaction. Psychological safety in those interprofessional teams seems to play an important role in mediating these effects.
Valentin et al., 2013	Evidence-based practices and guidelines	Micro	To assess the frequency and contributing factors of medication and dislodgement errors attributable to common routine processes in a cohort of intensive care units, with a special focus on the potential impact of safety climate.	Safety climate was measured by a total of 53 items from the Vienna Safety Climate Questionnaire (VSCQ) listed in the catalogue from the European Network for Patient Safety on safety culture instruments used in member states of the European Union	Both workload and safety climate are significant, albeit opposite, determinants of medical errors in ICUs. In addition to adding to the evidence on the importance of safety climate in ICUs in general, our results suggest that safety climate abates errors that represent a particularly error-prone aspect of medical frontline staff performance during routine ICU processes.
Walther et al., 2022	Open communication / Evidence-based practices and guidelines	Micro	Speaking-up is a method of assertive communication that increases patient safety but often encounters barriers. Numerous studies describe programs introducing speaking-up with varying success; the common denominator seems to be the need for a multimodal and sustained approach to achieve the required change in behaviour and culture for safer health care.	Safety Attitudes Questionnaires	These results support current opinion that multimodal programs and continued effort are required, but that speaking-up can indeed be strengthened. We found that the 22-month implementation program was associated with higher levels of self-reported speaking-up behaviour, as evidenced by a significant improvement in 2 of 3 elements on the postimplementation Safety Attitudes Questionnaire items addressing assertive communication and speaking-up, and higher overall scores in the climate survey as compared with the benchmark of similar health care institutions in Switzerland. However, this evidence seems to show that strengthening of peer support to do the right thing might indeed need more focus in consecutive programs. Although most respondents reported at least 1 patient safety concern during the past 4 weeks, more than half reported withholding voice within the same period—this is a stark reminder of the fact that even an intervention of our dimension is only one step on the road to patient safety.
Wangler et al., 2013	Survey on SC / Teamwork and collaboration	Micro	The purpose of this study was to investigate how chiropractors manage potentially risky clinical scenarios. We also sought to establish how chiropractors perceive the safety	NA	Degree of positive agreement among respondents with respect to six safety dimensions measured (Patient tracking/Follow-up, Communication openness, process and standardization, staff training, work pressure and teamwork). A score greater than 60% but less than 75% was arbitrarily considered to indicate that respondents were moderately positive about the given safety dimension. A score of 75% (indicated by the

			climate in their workplace and thus whether there is an observable culture of safety within the profession.		dotted line), or greater, was arbitrarily considered to indicate that respondents were highly positive about the given safety dimension. Thus, it was established in this study that Swiss chiropractors were moderately positive about patient tracking/ follow-up, and highly positive about all other safety dimensions. UK chiropractors were highly positive about work pressure and teamwork and moderately positive about all other safety dimensions. However, some respondents also highlighted the fact that a high proportion of chiropractors (33% of UK respondents and 48% of Swiss respondents in our study) work alone, limiting opportunities for fostering a safety culture through activities such as teamwork.
Zaugg et Wangler, 2009	Leadership / Training	Micro	The objective of this review is to develop an evidence-focused and work-based model framework for patient safety training, that is, reporting and learning from adverse events in chiropractic care. This article will not debate specific issues of adverse events from spinal manipulation. The main focus is on education for patient safety.	NA	The articles also stressed the importance of the conditions under which we work, how we interact with one another, and, most importantly, how we train every member of the team to participate in the quest for safer patient care. The necessary changes are as much cultural as technical. Leadership, commitment, and communication together with trust and openness to build a culture of patient safety are prerequisites for successful reporting and learning.
Zimmermann et al., 2013	Methodology	Micro	The objective of this study was to assess the psychometric properties of the German language version of the SAQ.	Safety Attitudes questionnaire	NA (psychometric)
Zúñiga et al., 2013	Methodology	Micro	For this study of safety climate in Swiss nursing home units, the NHSPSC was linguistically adapted to the Swiss context and to address the unit as well as facility level, with the aim of testing aspects of the validity and reliability of the Swiss version before its use in Swiss nursing home units.	NHSPSC Swiss (Nursing Home Survey on Patient Safety Culture)	NA
Zúñiga et al., 2015	Job satisfaction /Teamwork and	Micro	To describe care worker-reported quality of care and to examine its	NA	Work environment, work stressors, and implicit rationing of nursing care were important factors related to quality of care, while staffing level, staff mix, turnover, and leadership

	collaboration / Resources and training		relationship with staffing variables, work environment, work stressors, and implicit rationing of nursing care.		were not. In our study, teamwork and safety climate was the most important factor related to good quality of care. Good teamwork in health care teams is reached through interdependent collaboration, open communication, and shared decision-making. Care workers themselves identify local interaction patterns such as being approachable, pitching-in, seeking assistance, giving praise or respect as fundamental activities that improve teamwork and quality of care. Teamwork allows for a smoother work organization, streamlines workflow, and gives more time to offer residents individualized care. Both high stress due to workload and care workers' perception of inadequate staffing resources were related to a decreased quality of care, as opposed to actual staffing levels, which showed no relationship with quality of care. Care workers who are able to collaborate as a team, have a shared concept about care, a clear task distribution, and an open communication, might better handle a higher workload than a less-well functioning team. Care workers in nursing home conceptualize quality of care as creating a home-like environment, where holistic, emotional, individualized, and family-centered care is possible. Both rationing of caring and of social care refer to the reduction of the relational aspect of nursing care and make it difficult to provide individualized and person-centered care. In contrast, the rationing of documentation is related to a better perception of quality of care, probably because less time spent with administrative tasks allowing more time to be spent with residents.
Zúñiga et al., 2015	Job satisfaction / Teamwork and collaboration / Resources and training	Micro	The purpose of this study was (1) to describe levels and patterns of self-reported implicit rationing of nursing care in Swiss nursing homes and (2) to explore the relationship between staffing level, turnover, and work environment factors and implicit rationing of nursing care.	Safety Attitudes Questionnaire	" Statistically significant factors related to implicit rationing of care were the perception of lower staffing resources, teamwork and safety climate". Improving teamwork and reducing work stressors could possibly lead to less implicit rationing of nursing care. adding more manpower to a team experiencing a poor work environment might not reduce rationing of nursing care if the team's perception and handling of the adequacy of staffing, teamwork and safety climate, or work stressors do not change. it is important to sensitize to implicit rationing of care, discuss it openly within nursing homes and in public, and to support care workers both by providing an adequate work environment improving and developing interventions to help handle the issue in view of the increasing problem of recruiting and retaining qualified personnel in the nursing home sector.

