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Implementation of the WHO Standards to assess the quality of paediatric care using health workers as source of data: findings of a multicentre study (CHOICE) in Italy

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ABSTRACT

Objectives There is little experience in implementing the WHO Standards for improving the quality of care (QOC) for children. We describe the use of 75 WHO-Standard based Quality Measures to assess paediatric QOC, using health workers (HWs) as data sources.

Design Cross-sectional study.

Setting 12 Italian hospitals.

Participants The minimum target of 75% of HWs was reached in all facilities; answers from 598 HWs were analysed.

Primary and secondary outcome measures 75 prioritised WHO Quality Measures were collected using a validated, and Italian-language questionnaire exploring views of HWs providing care to children. A QOC index was also calculated based on the assessed Quality Measures.

Results In both the domain of resources and work organisation, most Quality Measures showed a high overall frequency of reported 'need for improvement', with high variability across hospitals. Key needs for improvement included: availability of clear and complete protocols (eg, on paediatric emergencies: 44.6%; range 10.6%–92.6%); clear hospitalisation criteria for diarrhoea (50.5%; range 30.3%–71.7%); number of hand-washing stations (13.2%; range 3.4%–37.0%); equipped working rooms with computers for HWs (66.1%; range: 32.1%–97.0%); training (eg, on pain management: 43.5%; range 17.9%–76.7%), periodic discussion of clinical cases (43.5%; range 8.1%–83.7%) audits (48.8%; range 29.7%–76.7%); and all indicators related to system to improve QOC. Factors significantly associated with a lower QOC Index included HWs working in facilities in Southern Italy (p=0.001) and absence of a paediatric emergency department (p=0.011).

Conclusions The use of the 75 prioritised Quality Measures, specific to HWs provide valuable data on paediatric QOC, which can be used to drive a quality improvement process.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Previous studies conducted in the European region revealed gaps in the quality of care (QOC) for children, but the perspective of service providers has been rarely investigated.

WHAT THIS STUDY ADDS

⇒ The utilisation of 75 prioritised WHO-Standard based Quality Measures to assess service providers' perspective on paediatric QOC across 12 Italian hospitals revealed large heterogeneity across facilities, with several key common gaps, in particular related to availability of resources and organisation of care.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ The prioritised Quality Measures allows for the identification of both general and facility-specific gaps in paediatric QOC. Quality improvement initiatives should consider service providers' perspectives, and focus on both a core list of priority common across facilities, and specific needs at each facility level.

BACKGROUND

Quality of care (QOC) has been recognised by the WHO as a key aspect of the child health agenda.[1] Currently, the levels of QOC still remain substandard in many different paediatric settings, in both low-income and high-income.[2–6] Specific to the high-income countries setting, several studies in Europe and the USA reported inappropriate hospitalisations, medical errors, drug overuse, inadequate pain management, unsatisfactory patient experience of care and lack of resources, such as shortage of staff.[7–10] Poor QOC may lead to sicker patients, more disabilities, lower confidence in the healthcare system and higher global social costs.[11]

Gaps in QOC have been found in facilities of different types (eg, both public and private)

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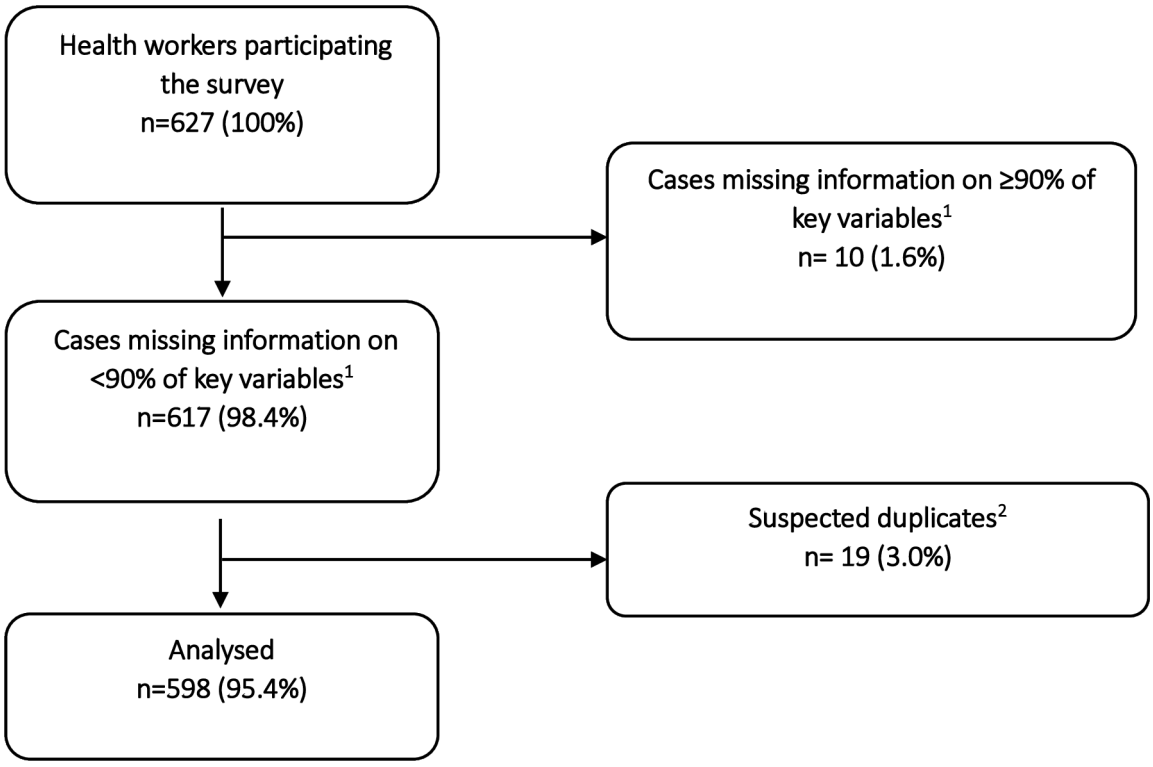

Figure 1 Flow diagram. [1]Missing information on all close-ended questions including sociodemographic questions; [2]suspected duplicates identified as cases with same answers to close-ended questions including sociodemographic questions and, when available, same date of questionnaire completion.

and levels.[12] Moreover, health workers' (HWs') perspective on QOC has been rarely investigated.[13] Including the voice of healthcare staff in assessing QOC may help in identifying key aspects in QOC gaps, and in building local ownership and commitment to drive changes.[2]

Recently, WHO developed a list of 'Standards to Improve the Quality of Care for Children and Young Adolescents at Facility Level'.[14] The eight standards are organised in three main domains — provision of care, experience of care and health system resources. One of the first recommended step in implementing the WHO Standards is conducting a baseline assessment to analyse existing QOC.[14]

Given that WHO Standards are relatively recent,[14] there is little experience in their application. Therefore, we established a multicentre project called CHOICE (Child HOspItal CarE). Data collection tools for the project were developed and validated.[15] This paper is part of a series of papers reporting key results on the baseline assessment of the CHOICE study in Italy. Specifically, this paper focuses on data collected on QOC for children when using HWs as a source of data for a prioritised list of QOC measures.

METHODS

Study design

This was a multicentre cross-sectional study, and it is reported according to the Strengthening the Reporting of Observational Studies in Epidemiology statement.[16]

Study population

The study was conducted in the 12 hospitals providing paediatric care and participating in the CHOICE study, distributed across the national territory (North, Centre and South) (online supplemental file 1). Intentionally, study sites were chosen to have different characteristics in terms of the organisational structure (ie, facility level and type) and volume of work (online supplemental file 2).

HWs included in the study were paediatricians, residents in paediatrics, and nurses routinely assisting children in the paediatric wards or emergency departments (EDs) of participating centres. An HW coordinator was identified in each study site, and he/she directly and orally invited other HWs to answer an anonymous online survey by email or other channels (eg, WhatsApp) after providing their consent to study participation. HWs with the following characteristics were excluded: HWs not involved in clinical care, or working only on surgical or neuro/psychiatric conditions, or other less common conditions not considered as part of 'general paediatrics'; prolonged absence from work (eg, maternity leave) and/or unavailability during the study period. The study had a predefined target to collect answers from at least 75% of staff, that is, paediatricians, residents in paediatrics and nurses routinely assisting children in the paediatric wards or EDs, in each participating facility.

Study variables and data collection tools

A validated questionnaire[15] was used to collect data. The process of prioritisation of the WHO Quality Measures and

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Table 1 Physical resources: need for improvement

	Hospital range		Total*
	Min	Max	N=598
	%	%	%
Triage			
Clear and complete protocols	10.6	85.2	38.6
Policy defining maximum waiting time	12.1	70.4	41.6
24/7 working triage	0.0	25.9	5.5
Paediatric emergencies			
Clear and complete protocols	10.6	92.6	44.6
Adequate physical structures (space, room)	17.2	96.3	55.7
Visible algorithms on the walls	23.3	91.9	58.2
Equipped and available crash cart	0.0	37.0	8.7
Available emergency drugs	1.5	33.3	8.7
Respiratory diseases			
Clear and complete protocols	9.1	77.8	41.5
Results of blood examinations within 1 hour	9.0	54.1	27.3
Available antibiotics/bronchodilators	0.0	11.1	2.8
O_2 availability	0.0	7.4	1.5
Available O_2 equipment/inhalators	0.0	22.2	5.7
Diarrhoea			
Clear and complete protocols	16.2	74.1	39.3
Visible rehydration algorithm on the walls	63.6	92.6	79.3
Clear indications for hospitalisation	30.3	71.7	50.5
Available rehydration solutions (oral and intravenous)	0.0	29.6	7.2
Fever			
Clear and complete protocols	12.1	67.4	37.0
Microscope for urine/liquor examination	5.1	82.1	50.2
Hemoculture with results within 2 days	8.3	62.1	29.6
Pain			
Clear and complete protocols	4.5	76.1	26.8
Available painkillers (adequate for children)	1.1	40.7	9.9
Standard non-pharmacological procedures for pain treatment	12.8	59.5	35.1
Child abuse			
Clear and complete protocols	10.3	83.3	44.5
Multidisciplinary team for children support	15.4	86.7	39.5
Children who need referral			
Clear and complete protocols	39.3	86.5	64.7
Procedure for a secure timely referral	31.0	70.3	53.7
Review system of referred patients	67.9	86.7	75.8
Prevention of hospital infections			
Clear and complete protocols	11.0	43.5	22.1
Sufficient no. of hand-washing stations	3.4	37.0	13.2
Available surgical supply and PPE	0.0	33.3	7.0
Hospital pharmacy			
Sufficient no. of pharmacologists	9.9	70.4	30.6
Sufficient drugs stocks	0.0	44.4	10.4

Continued

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Table 1 Continued

	Hospital range		Total*
	Min	Max	N=598
	%	%	%
Sufficient antibiotics stocks	0.0	25.9	7.2
Rapid distribution drug service	9.0	55.6	24.1
Physical structures			
Sanitary facilities for HWs	14.3	72.7	48.2
Equipped working rooms	32.1	97.0	66.1
Sufficient no. of computers	21.4	89.7	70.2
Sufficient no. of electrical outlets	7.1	57.6	35.8
Adequate canteen service	8.3	95.7	49.7

Table sums up the frequency of 'need for improvement' answers; frequencies by hospitals are reported in online supplemental file 6.
*Hospital information is missing for 36 health workers.
HWs, health workers; PPE, personal protective equipment.

of questionnaire validation has been reported elsewhere[15] and is summarised in the online supplemental file 3.

Both health service users (children and their parents) and health providers (HWs at facility level) were involved in the CHOICE study in multiple stages. As a first step, in 2019–2020 they were involved in the prioritisation of Quality Measures, thus affecting the selection of research outcomes. Second, they were involved in the validation of data collection tools,[15] which included collecting their opinion on the acceptability of the questionnaire which resulted in good values of validity, reliability, acceptability, perceived utility and internal consistency.[15] Finally, their opinion on QOC was actively collected; more specifically, the opinion of service users was collected on 75 prioritised Quality Measures reported in a separate publication[17], and the opinion of service providers was collected on another 75 prioritised Quality Measures, reported in this publication. In each facility, HWs were involved in the dissemination of study findings (year 2022–2023), and in planning quality improvement interventions. In the nearest future we plan to further involve the general public in data dissemination.

Among the 75 Quality Measures collected from service providers' perspective, 40 were pertinent to physical resources, 25 to the organisation of care and 10 to the organisational changes related to the COVID-19 pandemic (online supplemental file 3). Each Quality Measure could be rated by respondents based on a qualitative three option scale about the adequacy of service, including the answers 'Yes', 'No, needing some improvement' and 'No, needing substantial improvement'. Questionnaires were delivered in Italian, the same language as the validation study,[15] between 30 April 2021 and 31 January 2022 (during the COVID-19 pandemic), using REDCap 8.5.21—2021 Vanderbilt University, via a centralised platform by self-completion. The questionnaire requested the HW to report on their views on QOC at the time of the questionnaire administration. For questions on education, the questionnaire referred to the education received in the year preceding the survey administration. Data on HWs characteristics were also collected.

Data analysis

Collected data were preprocessed removing cases that were missing information on ≥90% of all close-ended questions including those on sociodemographic variables. Cases with the same answers to all close-ended questions and the same date of questionnaire completion (where available) were identified as suspected duplicates and only the most recent entry was kept for analysis.

We conducted a descriptive analysis of respondents' characteristics and Quality Measures, presenting data on the overall sample and by hospital, for each domain and subdomain of QOC explored (physical resources, work organisation and organisational changes related to the COVID-19 pandemic). In the primary analysis, we presented together the two answers 'No, need for some improvement' and 'No, needing for substantial improvement'. To further assess findings, the frequency of 'No, needing substantial improvement' answers were also presented as sensitivity analyses.

A QOC index was calculated, based on the WHO framework domains,[14] and based on similar index developed using the WHO Standards for improving the quality of maternal and newborn care.[18–20] Online supplemental file 4 briefly summarises the scoring system. Only HWs providing all answers to the 75 WHO Quality Measures contributed to the QOC indexes. The QOC indexes were graphically presented with kernel density curves and described using median and IQRs. A comparison between the domain-specific QOC indexes was performed using the Kruskal-Wallis test.

Associations between the total QOC index and HWs characteristics (ie, department; gender; years of working experience in the paediatric field; years worked in the study hospital; year of questionnaire completion)

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Table 2 Work organisation: need for improvement

	Hospital range		Total*
	Min	Max	N=598
	%	%	%
Health worker organisation			
Written leadership structure	24.1	67.4	46.0
Procedures for human resources maintenance (recruitment/skills development and motivation)	41.4	83.8	66.7
Clear work plan according to HW roles	27.6	73.9	46.0
Available calendar of HW shifts	3.6	23.9	14.4
Education			
Education on triage and paediatric emergencies	20.9	71.8	49.2
Education on common paediatric diseases	25.8	60.0	42.8
Education on pain control	17.9	76.7	43.5
Education on child abuse	31.2	81.5	53.5
Education on appropriate drug use	34.8	69.0	50.5
Education on child nutrition	44.9	75.0	60.9
Education on communication, counselling	61.5	78.4	71.4
Education on respectful care	56.4	81.1	71.2
Education on ethical aspects of care	41.9	79.2	64.5
Data collecting system			
Clear information in medical records	13.3	51.9	31.1
Adequate monitoring graphics	16.2	55.6	33.1
Clear and complete digital database	45.5	92.6	55.0
Quality of care			
Periodic discussion of clinical cases (1 /week at least)	8.1	83.7	43.5
Audit for severe clinical cases or deaths	29.7	76.7	48.8
Monitoring of QOC key-indicators	50.0	85.2	63.2
Patient involvement in QOC improvement process	51.7	90.0	72.6
Clear, shared action plans for QOC improvement	37.9	77.8	58.0
Personal involvement in QOC improvement process	37.9	65.2	51.7
Adequate education on QOC improvement process	62.1	81.5	70.7
Supervision			
Onsite education and supervision (in the last 3 months)	42.9	77.8	58.5
Yearly work evaluation	25.0	66.7	52.2

Table sums up the frequency of 'need for improvement' answers while for education subdomain the frequency of health workers receiving no or not adequate education in the year preceding the survey participation is shown; frequencies by hospitals are reported in online supplemental file 7.
*Hospital information is missing for 36 health workers.
HWs, health workers; QOC, quality of care.

adjusted for hospital characteristics (online supplemental file 1) were explored using a general linear model using Gaussian family with identity link function and robust standard errors. For the selection of the optimal model, automatic backward elimination method was applied. For factor variables, the category with the highest frequency was selected as a reference. Findings were presented with β coefficients with 95% CIs and p value.

A p value of <0.05 was taken as statistically significant. Stata/SE V.14.0 (Stata Corporation, College Station, TX, USA) and R V.4.1.1 was used for data analysis.

RESULTS

Characteristics of the sample

In each facility the target of collecting answers from at least 75% of staff was reached. Of 627 HWs participating the survey, a total of 598 were analysed across the 12 hospitals and included 185 (30.9%) paediatricians, 138 (23.1%) residents in paediatrics and 227 (38.0%) nurses while 48 (8.0%) declared to have a professionality among those included in the study without disclosing it (figure 1). The majority of participants were female (74.9%), working both in paediatric clinic and emergency room (49.3%). Most participating HW had a working experience of

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Table 3 Reorganisational changes due to COVID-19: need for improvement

	Hospital range		Total*
	Min	Max	N=598
	%	%	%
Clear, written COVID-19 care pathways	6.7	59.3	24.6
Dedicated protocols for COVID-19 patients	6.9	48.6	23.1
Reorganisation of clinical care	3.6	33.3	19.7
Availability of personal protective equipment	0.0	37.0	12.2
Access to hand-washing station	0.0	30.2	10.4
NP swab to all admitted patients	0.0	14.8	2.0
NP swab to caregivers	0.0	14.8	2.2
Clear and complete COVID-19 clinical protocols	0.0	35.1	16.6
COVID-19 hospital guidelines	17.2	73.0	39.0
COVID-19 information and education	22.2	56.8	35.5

Table sums up the frequency of 'need for improvement' answers; frequencies by hospitals are reported in online supplemental file 8.
*Hospital information is missing for 36 health workers.
NP, nasal-pharyngeal.;

1–5 years or greater than 10 years in the paediatric area (41.5% and 36.3%, respectively) (online supplemental file 5).

Quality Measures

Quality Measures highly differed among hospitals in all subdomains explored, making it difficult to identify common area of strengths and weakness across facilities (tables 1–3, online supplemental files 6–8).

Specifically, in the domain of physical resources (table 1, online supplemental file 6), a small group of measures had low overall frequencies of reported 'need for improvement', with low variability across hospitals. These included: the availability of antibiotics/bronchodilators (2.8%; range: 0.0%–11.1%) and of oxygen (1.5%; range: 0.0%–7.4%). A second small group of Quality Measures had low overall frequencies of reported 'need for improvement', but with high variability among different hospitals. These included: the availability of a 24/7 working triage (5.5%, range: 0.0%–25.9%); of surgical supply and personal protective equipment (7.0%; range: 0.0%–33.3%). A third small group of Quality Measures had high overall frequencies of 'need for improvement', with low variability across hospitals. These included: system to review care provided to referred children (75.8% of HW reporting a need for improvement; range across hospitals: 67.9%–86.7%) and visible rehydration algorithm clearly exposed on the ward walls (79.3%; range: 63.6%–92.6%). All the remaining Quality Measures had high overall frequencies of need for improvement with high variability among different hospitals.

In the domain of work organisation (table 2, online supplemental file 7), there was only one Quality Measure with low overall frequency of reported 'need for improvement', with low variability across hospitals: the availability of calendar of HW shifts (14.4%, range: 3.6%–23.9%). All other Quality Measures had high overall frequencies of 'need for improvement' with high variability among different hospitals. This included, as example: the availability of a written leadership structure (46.0% of HWs reporting a need for improvement; range 24.1%–67.4%); several Quality Measures related to capacity development, such as training on common paediatric diseases (42.8%; range: 25.8%–60.0%), on pain management (43.5%; range 17.9%–76.7%), on respectful care (71.2%, range: 56.4%–81.1%), on communication/counselling (71.4%; range: 61.5%–78.4%), and onsite education and supervision (58.5%; range 42.9%–77.8%), periodic discussion of clinical cases (43.5%; range 8.1%–83.7%), audits (48.8%; range 29.7%–76.7%), and all indicators related to system to improve QOC.

In the organisational changes due to COVID-19 domain (table 3, online supplemental file 8) two measures showed low reported frequencies of need of improvement, and low variability: the possibility to perform nasal-pharyngeal swabs to all admitted patients (2.0%, range: 0.0%–14.8%) and to caregivers (2.2%, range: 0.0%–14.8%). Another two measures showed low reported frequencies of need of improvement, but high variability: access to hand-washing station (10.4%, range: 0.0%–30.2%) and availability of personal protective equipment (12.2%; range: 0.0%–37.0%). All other measures showed relevant frequencies of need of improvement, and high variability.

Sensitivity analyses

Findings of the sensitivity analyses were similar to findings of the primary analysis (online supplemental file 9) with all hospitals reporting need for substantial improvements in the domain of physical resources with the lowest performing Quality Measures being system to review care provided to referred children, and rehydration algorithm for diarrhoea clearly exposed on the ward wall. Education and QOC were confirmed as priority subdomains for work organisation domain, while relatively small gaps were reported for reorganisational changes due to COVID-19 domain.

QOC index and multivariate analysis

QOC indexes (domain-specific and total) differed significantly among hospitals (figure 2, online supplemental file 10) with the lower median values being in the domain of work organisation (60.0, IQR 46.0–78.0 vs physical resources: 81.2, IQR 72.5–88.8 vs organisational changes due to COVID-19: 95.0, IQR 85.0–100.0, p<0.001).

Based on the multivariate analysis (table 4), both paediatricians and resident in paediatrics reported

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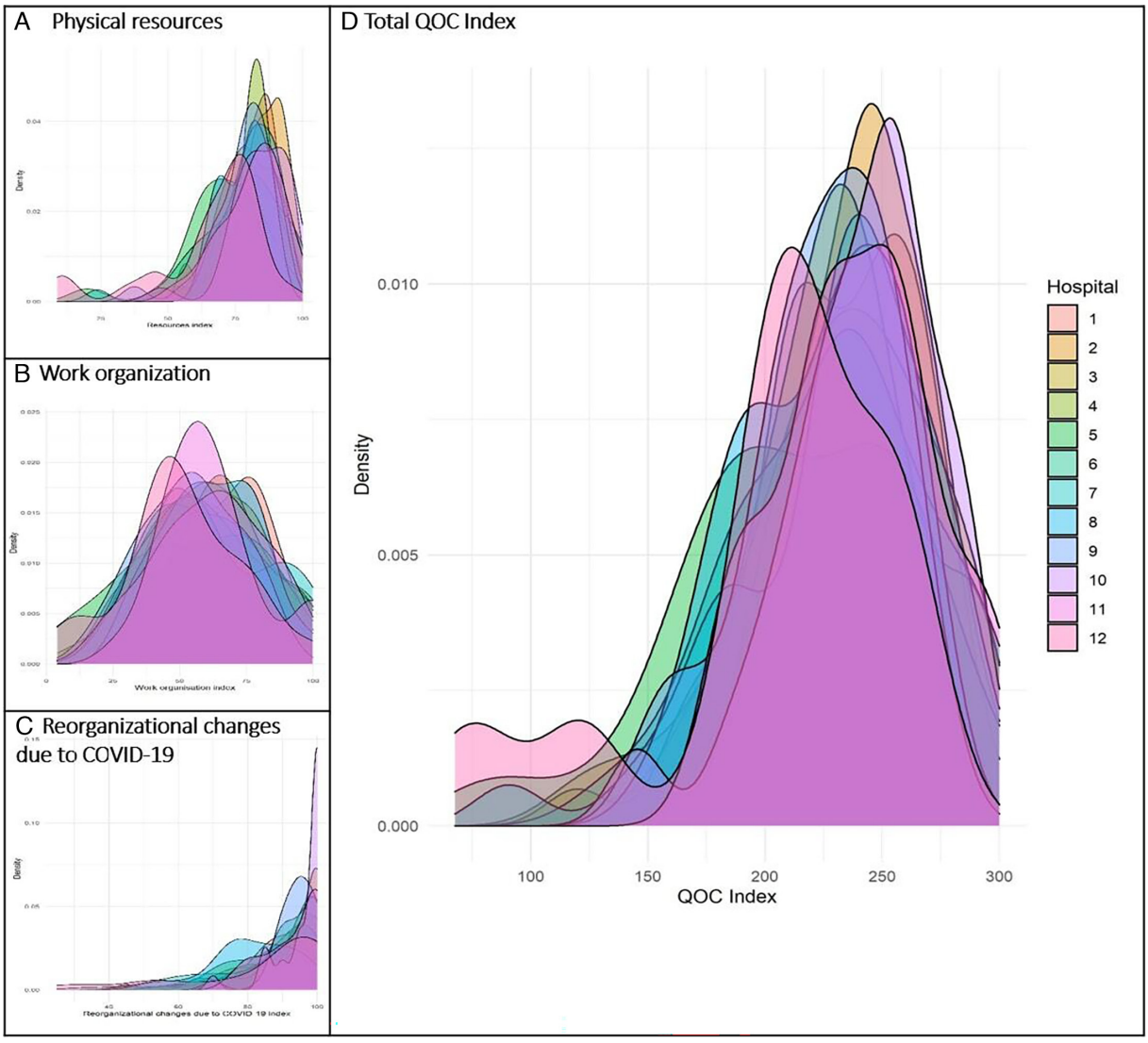

Figure 2 QOC index by hospital (n=514). QOC, quality of care.

higher QOC index compared with nurses (p<0.001 for both comparison). HW with <1 year of work in the study hospital reported higher QOC index for compared with HW working 1–5 years (p=0.005). Hospital with higher numbers of children admitted in short stay-observation associated with higher total QOC index (β=1.29 for each hundred children, p<0.001).

Hospital characteristics significantly associated with lower total QOC index were geographical location — with HW working in Southern Italy reporting lower QOC index compared with HW working in Northern Italy (p<0.001)—, absence of paediatric ED separated from adult ED (β=−16.43, p=0.011) and absolute number (hundreds) of hospitalised children (β=−2.11, p=0.002).

DISCUSSION

This is the first report on the use of 75 prioritised Quality Measures derived from the WHO Standards for improving the QOC for children and young adolescents in health facilities[14] to assess the health providers perspective. As a general lesson, the study suggests that the use of the 75 WHO-Standard based Quality Measures, as prioritised by the CHOICE project, can help to identify key gaps in QOC in paediatric facilities.

The study also generated new evidence on the QOC in paediatric hospital care in Italy, highlighting: (a) a large variability in QOC among participating hospitals; (b) areas where all hospitals had major gaps; (c) areas where all hospitals had good practices. Several of the key gaps highlighted in this study call for urgent action. Clearly, essential resources, such as computers and working rooms, are needed to improve performance.

In regard to staff training, key gaps observed (training on communication, respectful care, ethics) should be addressed. Quality improvement training programmes, in particular during residency, allows trainees to develop necessary skills to deliver high-quality patient care.[21–25] Some hospitals also reported the absence of clear and complete information on medical records. Inadequate documentation and poor communication may result in

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Table 4 Associations between relevant variables and QOC index, multivariate linear regression (n=454)

		β estimates (95% CI)	P value
Health workers characteristics			
Qualification	Nurse	Reference	
	Paediatrician	17.83 (9.8 to 25.87)	<0.001
	Resident in paediatrics	25.1 (15.09 to 35.11)	<0.001
Years of work in the study hospital	<1	16.7 (4.97 to 28.43)	0.005
	1–5	Reference	
	6–10	−3.97 (−16.4 to 8.47)	0.531
	>10	0.16 (−8.83 to 9.15)	0.972
Hospital characteristics			
Hospital geographical location	North	Reference	
	Centre	−5.78 (−16.6 to 5.04)	0.295
	South	−32.74 (−45.45 to −20.03)	<0.001
Paediatric ED separate from adult ED	Yes	Reference	
	No	−16.43 (−29.04 to −3.83)	0.011
Average number of children admitted in short stay-observation (hundreds)		−2.11 (−3.47 to −0.75)	0.002
Average number of children hospitalised (hundreds)		1.29 (0.5 to 2.08)	0.001
Intercept		232.91 (219.14 to 246.68)	<0.001

ED, emergency department.

significant harm to children. Several studies suggest that the use of electronic patient records may increase efficiency and even substitute for some in-person healthcare visits, even in paediatric and neonatal settings.[26 27]

The organisational changes due to the COVID-19 pandemic did not significantly impact on QOC from the HWs perspective, showing less gaps than the other explored domains. This represents an important result suggesting that all hospitals may have responded to COVID-19 pandemic with similar patterns, thus HWs from different hospitals showed similar perspectives. Moreover, questionnaires were administered just during the pandemic period, and since the COVID-19 has enormously impacted HW's clinical assistance, it was important to retain HWs perspective on this specific topic. The lack of information on COVID-19 situation represented the only problematic aspect emerged in some hospitals, as this may be due to the absence of specific protocols/procedures at the beginning of the pandemic. On the other hand, even if most HWs declared the presence of an adequate number of hand-washing dispenser, a great variability was noted. Alcohol-based hand rub dispensers at the point-of-care are strongly recommended by the WHO, especially in an ED setting.[28]

Some hospitals' and HWs characteristics significantly affected QOC index. Medical staff reported higher QOC index in comparison to nurses. This may be explained by both knowledge among staff (eg, on existence of specific resources and procedures) and both by subjective judgement, which may be affected by many factors including previously described perception among nurses of a high work overload and lack of autonomy when compared with a low salary,[29] thus generating fatigue and depression.[30–32] Future initiatives should therefore aim at collecting views of staff with different profiles, triangulating them with other data sources (eg, direct assessment) and discussing findings in a participatory manner with the whole staff involved in providing care.

The finding of HWs working in Southern Italy reporting lower QOC is aligned with other existing evidence.[33] Geographical disparity in QOC in Italy has been previously reported,[34] with more than one-fifth of hospitalised children from southern regions being on average treated in hospitals in Northern or Central Italy, suggesting a lack of adequate paediatric services in the south.[33 34] The significant association between absence of paediatric ED and a lower number of children hospitalised/admitted in short stay-observation with lower QOC index can also be explained with these variables being a proxy for facilities not fully specialised in paediatric care. Notably, existing guidelines recommend that every hospital ED should have the appropriate resources and staff to provide effective emergency care for children, with available separate spaces for paediatric patients.[35] In previous studies, hospitals with higher paediatric patients' volumes of work associated with greater adherence to established quality indicators.[36 37]

Limitations of this study include the relatively small sample of facilities; however, the CHOICE study did

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not aim at collecting large quantity of data, but rather at getting lessons on the implementation WHO Standards. Methods developed with this study could be easily translated elsewhere, and capitalised to collect large samples.

Findings of this study may have been affected by several response biases. However, this usually happens when participants are asked to self-report on subjective variables rather than on objective items (such as existence of specific equipment or procedure in place).[38] Some Quality Measures may reflect knowledge of staff on specific procedures, and this is a relevant aspect of QOC. Data collected with the survey can be triangulated with other data sources (direct assessment, interview with hospital directors) to further increase comprehensiveness of data.

Length of the questionnaire may also have affected results. However, we reached the target of collecting the questionnaire from 75% of staff in each facility. The data collection tool was validated before use,[15] and this should have increased data validity.

CONCLUSION

This study showed that the 75 WHO-Standard based Quality Measures may be useful to identify key gaps in QOC in paediatric hospitals, related to both hospital physical structure or to HWs specific roles. The high heterogeneity of perspectives across regions may also suggest that QOC in paediatric settings in Italy need further attention to achieve equitable outcomes.

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