"Front line talk" - South African health care workers' response to the Coronavirus (COVID-19) pandemic

11 April – 7 May 2020

"There is no doubt in my mind that we will prevail. This is because South Africans have come together like never before to wage the struggle against this virus, together."
- President Cyril Ramaphosa, 31 March 2020

CONTEXT

- Healthcare workers have been at the forefront of the epidemic and are at the highest risk of contracting the virus, in addition to high risks of long working hours, psychological distress, fatigue, occupational burnout, stigma and physical and psychological violence (WHO, 2020c).

- Globally, more than 90 000 healthcare workers are thought to be infected with COVID-19 and more than 600 deaths have been recorded (Mantovani, 6 May 2020).

- More than 3 000 South African healthcare workers were diagnosed with COVID-19 in South Africa by the 14th June 2020

- Labour unions have called for stringent measures to protect healthcare workers in the form of personal protective equipment (PPE), safe transport for those who make use of public transport, regular screening of healthcare workers for COVID-19, rotation of staff and the provision of counselling facilities to assist with the mental and emotional strain of the epidemic (Mlambo, 29 April 2020).

- HSRC and UKZN established a survey to understand the response of South African health care workers to the COVID-19 outbreak.

- This includes their knowledge, attitudes, behaviours and experiences.

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STUDY METHODS

STUDY DESIGN AND RECRUITMENT

Study population

- Health care workers aged ≥ 18 years and older from all nine provinces of South Africa

Time frames

- The survey was conducted from 11 April - 7 May 2020

Ethical approval

- Approval was obtained from the Human Sciences Research Council Research Ethics Committee

Recruitment of participants

- Healthcare workers were invited to participate in the online survey on the BINU datafree platform: www.hsrc.ac.za/heroes

Partnering Organisations

- The study was led by the HSRC in collaboration with the University of KwaZulu-Natal College of Health Sciences and Edendale Hospital, in KwaZulu-Natal.

COMMUNICATION STRATEGY

- The communication strategy consisted of a multi-pronged approach using stakeholders and various mediums and platforms to encourage participation. With regards to media, both mainstream media (radio and television interviews) as well as social medium platforms (Twitter and Facebook) were utilised.

Partnering Organisations
- The study was led by the HSRC in collaboration with the University of KwaZulu-Natal College of Health Sciences and Edendale Hospital, in KwaZulu-Natal. Support was received from the Health Professions Council of South Africa, the South African Nursing Council, the South African Pharmacy Council, other Health Professions Associations as well as the Department of Health HODs in all nine provinces

- Academic and research networks existing from the HSRC and UKZN were used extensively with the recruitment call being sent across networks of strategic partners in government, science councils, higher education institutions, non-profit stakeholders, private sector, medical aid organisations and hospital groups. Partners and organisations within the healthcare sector amplified the posts put out by the HSRC and this further encouraged healthcare workers to participate.

- Besides the regular posting across both Facebook and Twitter, the HSRC undertook two campaigns which were geo-targeted across the nine provinces in an attempt to recruit nurses from all provinces.

- This boosted social media campaign was seen by 14 560 people, and 1106 people engaged with the post

Total and daily confirmed COVID-19 cases, South Africa
The number of confirmed cases is lower than the number of total cases. The main reason for this is limited testing.
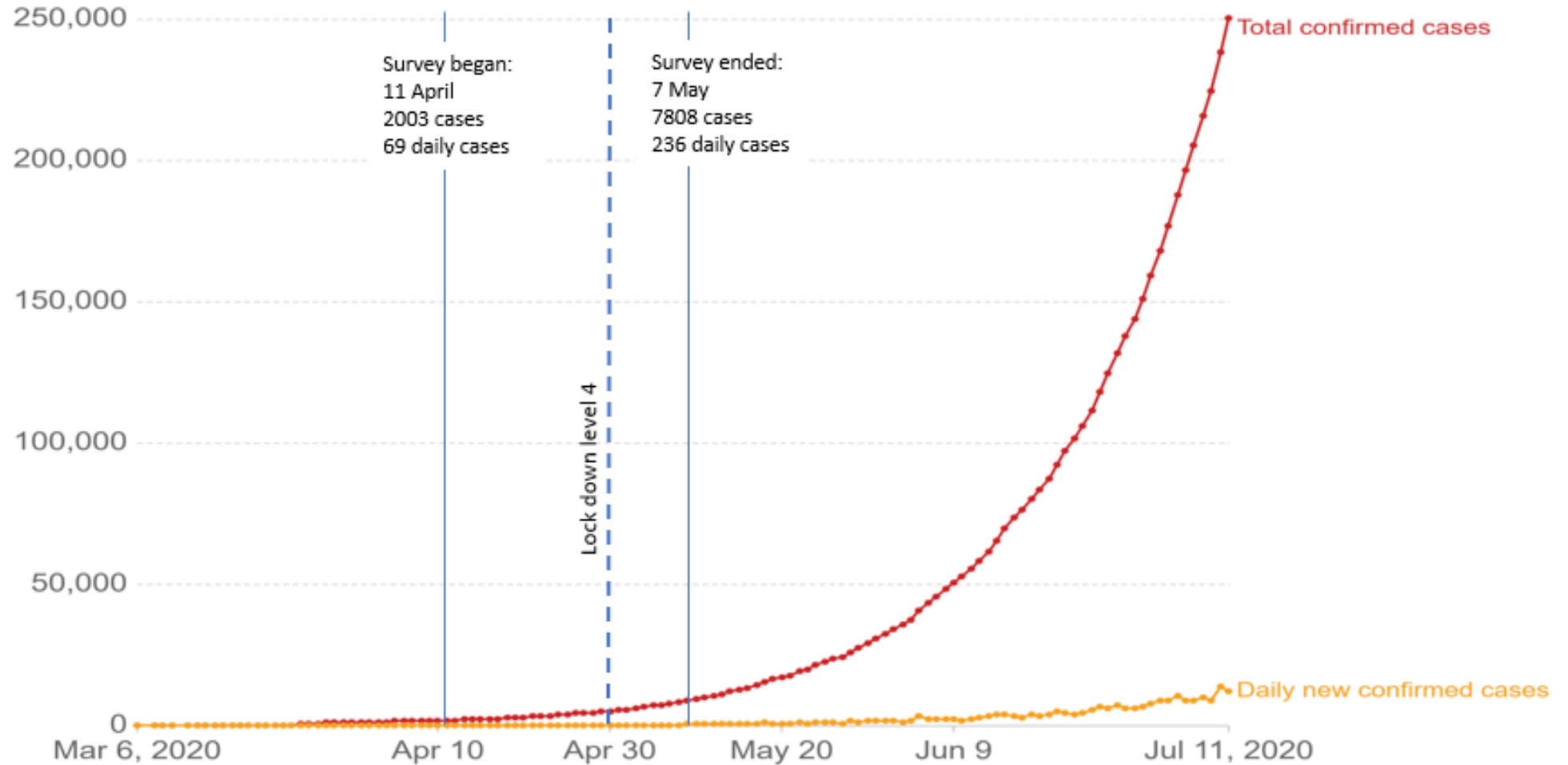
DATA COLLECTION TOOL

- 45 close-ended questions

THEMES INVESTIGATED
Socio-demographic characteristics
Knowledge about COVID-19
Sources of information about COVID-19
Training for the management of COVID-19
Self-perceived risk perception (including risk factors)
Infection prevention and control (IPC)
Personal protective equipment (PPE)
Risk to and concern for family members
Psychological distress (10-point Kessler Scale)
General health and wellbeing

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DATA ANALYSIS

- The data were exported from the online platform into MS Excel and processed and analysed in Stata 15.0. Analysts from HSRC and UKZN performed the analyses. Tabulations were performed reporting 95% CIs & values.

- The data were benchmarked (weighted) to the distribution of South Africa's health care professional population by age, sex, population group and province. This increases generalizability to the national sample of health care professionals.

- To our knowledge, there was no existing freely available database of the total health care professional population across various sectors in SA. Therefore we needed to compile and estimate the total population from individual databases and sources that were freely available.

- The health care professional population estimates by demographic categories were compiled using the following:
  - The total numbers of registered health professionals from the Health Professionals Council of South Africa (HPCSA) by province, sex and population group.
  - The total numbers of registered nurses from the South African Nursing Council (SANC) by province, sex and age for 2018. *Source* **https://www.sanc.co.za/stats/stat2018/Distribution%202018xls.htm**
  - The estimated proportions of medical practitioners by age and nurses by population group. **Source Shisana et al. (2004)[1].**

1. O Shisana, E Hall, KR Maluleke et al. (HSRC, MEDUNSA & MRC). The Impact of HIV/AIDS on the Health Sector. National survey of health personnel, ambulatory and hospitalised patients and health facilities 2002. http://www.hsrc.ac.za/en/research-outputs/view/854

RESULTS
11 April – 7 May 2020

DEMOGRAPHIC CHARACTERISTICS

DEMOGRAPHIC PROFILE BY SEX, AGE & POPULATION GROUP

Age group bar chart (%):
- 18-29 years: 19,8
- 30-39 years: 28,7
- 40-49 years: 23,5
- 50-59 years: 17,4
- >=60 years: 10,7
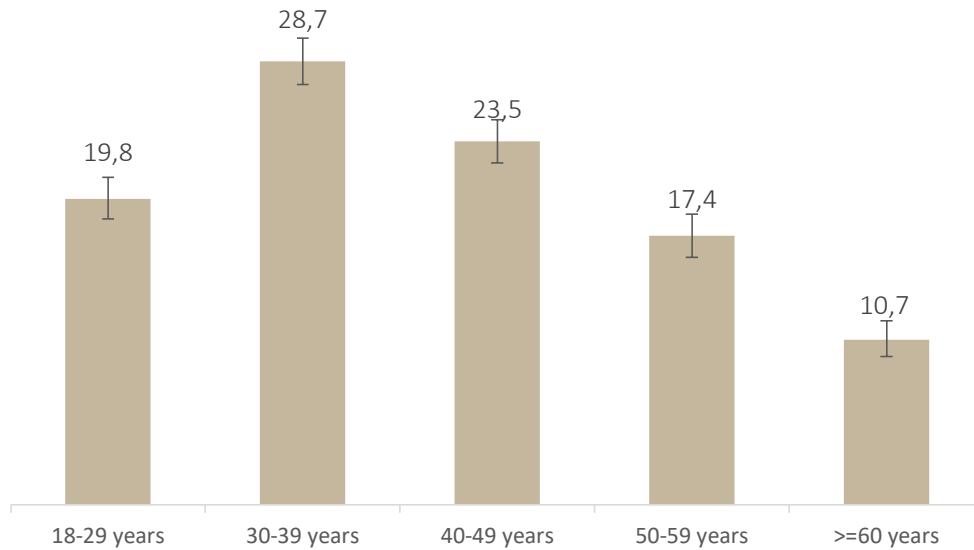
A total of 7 607 healthcare professionals participated in the survey.

78.2% of the sample were female, [95% CI 77.0-79.4]

A fifth were <30 years old, 70% were aged 30-59 years and 10.7% were older than 60 years

Sex donut chart (%):
- Female: 78,2
- Male: 21,8

Population group bar chart (%):
- Black African: 62,4
- White: 20,0
- Coloured: 11,5
- Indian/Asian: 5,1
- Other: 1,0

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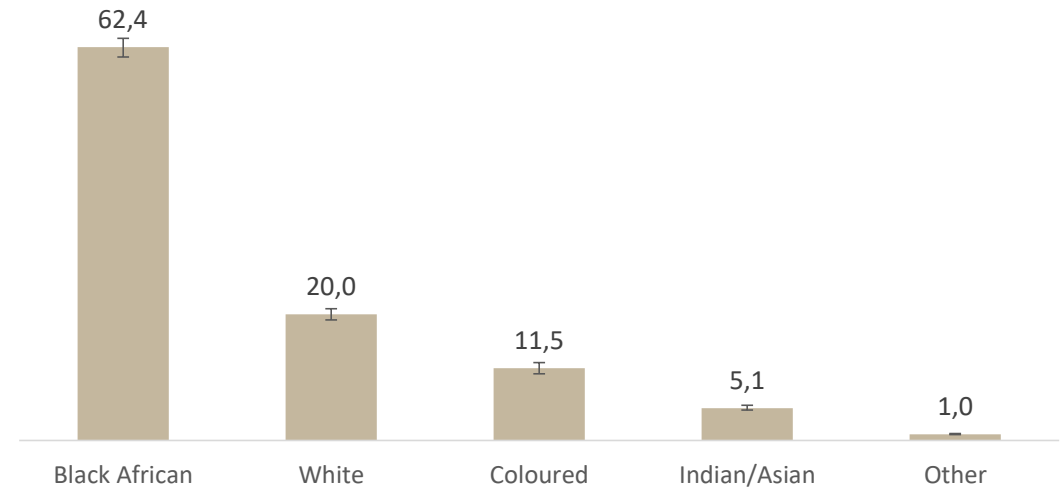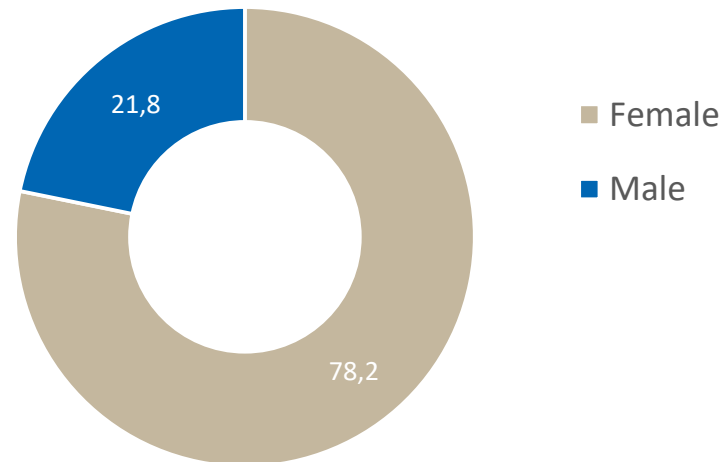
DEMOGRAPHIC PROFILE BY PROVINCE AND LOCALITY TYPE

- 29% worked in Gauteng,
- 21% worked in KwaZulu-Natal & 14% in the Western Cape;
- the lowest proportion (1.6%) of participants worked in the Northern Cape

- Over 60% worked in urban formal localities [95% CI 59.5-63.0]
- 2.9% worked in remote rural localities [95% CI 2.3-3.7]

Province	Value
Northern Cape	1,6
Free State	5,1
Mpumalanga	5,3
North West	5,6
Limpopo	8,9
Eastern Cape	9,1
Western Cape	13,8
KwaZulu-Natal	21,3
Gauteng	29,2
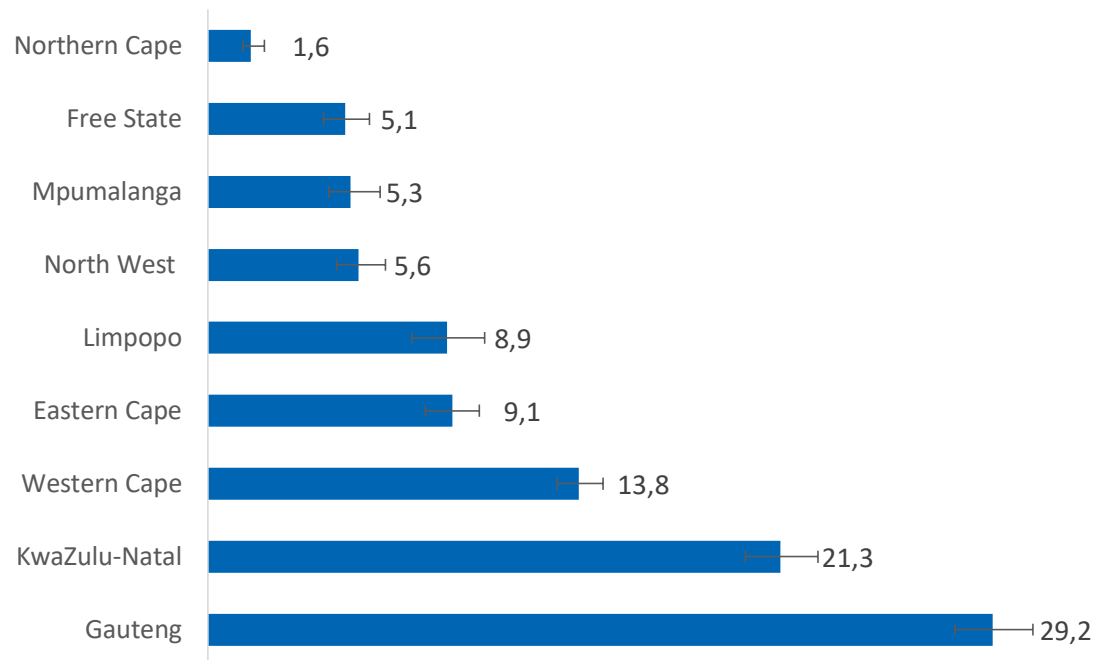
- Urban formal (formal urban areas)
- Urban informal (informal settlements, peri-urban areas)
- Rural formal (commercial farm areas)
- Rural informal (tribal authority areas)
- Remote rural (tribal authority areas)

Values: 61,2 · 21,6 · 7,7 · 6,6 · 2,9
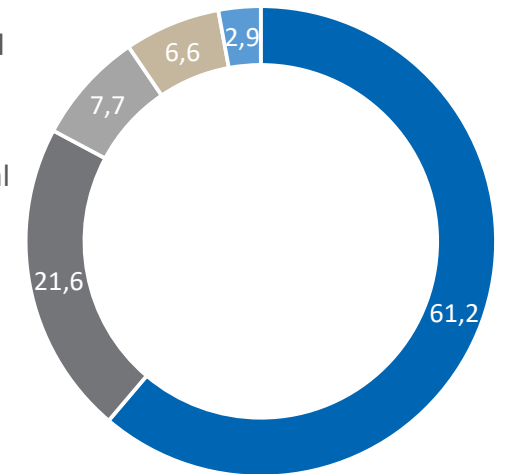
DEMOGRAPHIC PROFILE BY PROFESSIONAL CATEGORY

Nurse practitioners comprised 36.7% of the sample, other health care professional 34.7% and medical practitioners 28.7%.

** Other health care professional: Approximately 14% were physiotherapists and the remaining categories each constituted under 10% of the sample. Nearly 40% classified themselves as "other health care worker".

Category	Value
Medical practitioner	28,7
Other health care professional **	34,7
Nurse practitioner	36,7

Category	Value
Social Services	1,9
Pharmacist	2,9
Audio and Speech therapist	5,3
Dentist	5,3
Dietician	6,7
Radiographer	7,4
Psychologist	8,9
Occupational therapist	9,1
Physiotherapist	13,5
Other (specify)	39,2
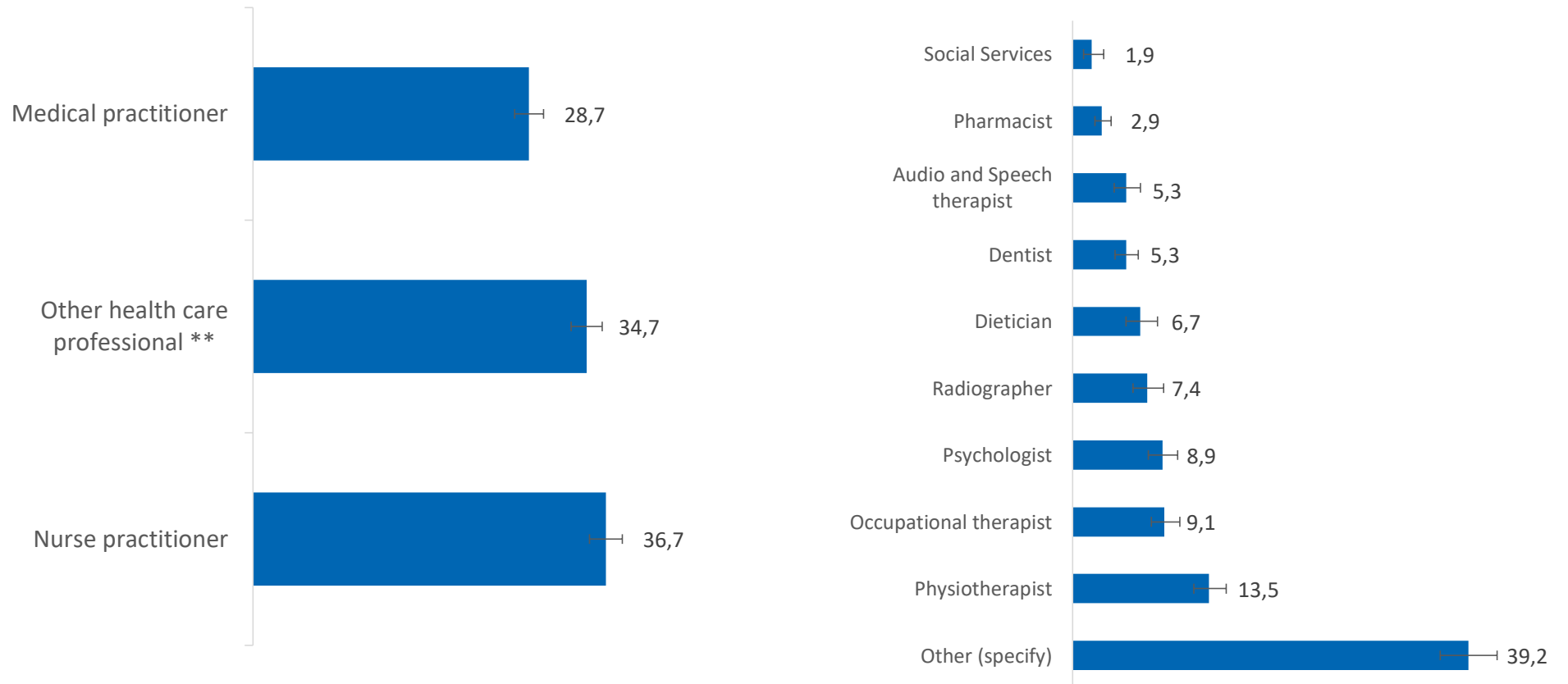
DEMOGRAPHIC PROFILE BY PUBLIC / PRIVATE EMPLOYMENT SECTOR

49,4

32,1

28,7

2,5

Public   Private   Other   Public & Private

49.4% worked in the public health sector

32.1% worked in the private sector

2.5% indicated they worked in both public and private sectors
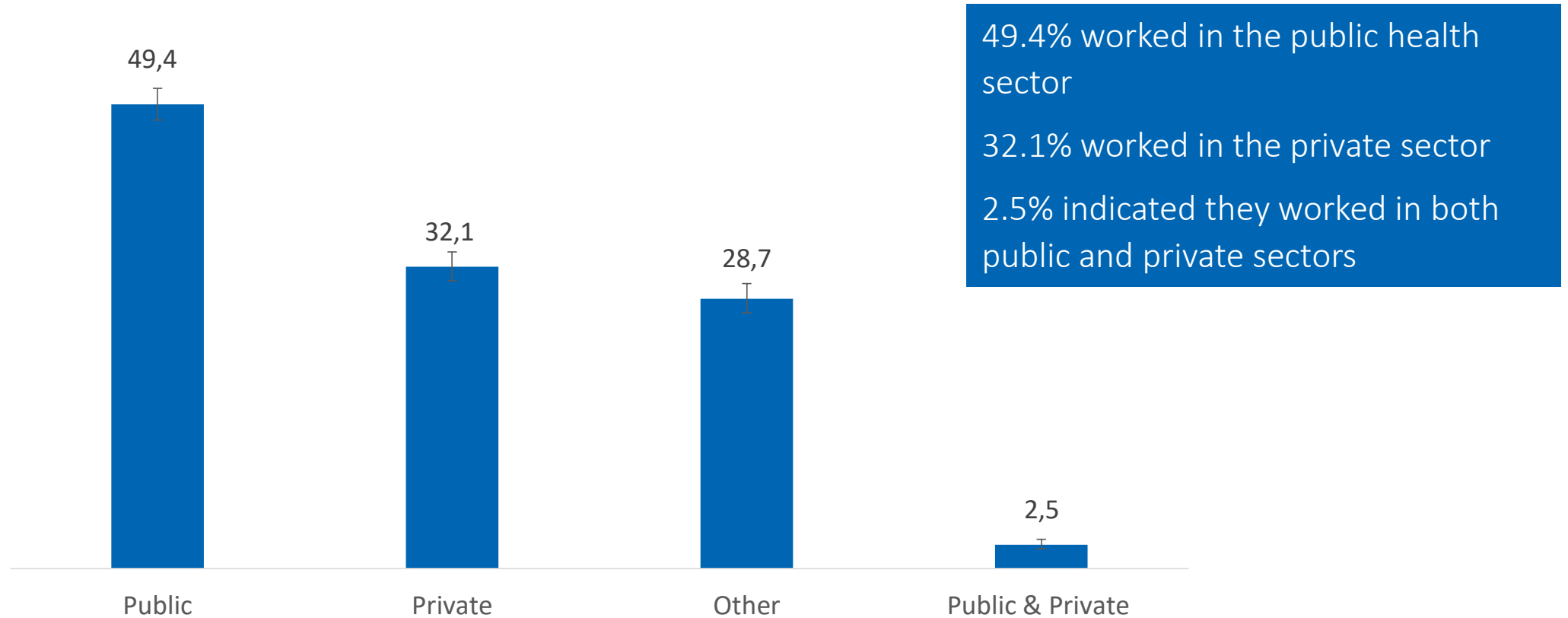
1. The public/private/other sectors were not mutually exclusive.
2. Other work sector included academic, NGO, civil sector

KNOWLEDGE OF INCUBATION PERIOD, SYMPTOMS AND TRANSMISSION

KNOWLEDGE OF COVID-19 INCUBATION PERIOD

BY PROFESSIONAL CATEGORY

■ Nurse practitioner ■ Medical practitioner ■ Other health care professional

Category	2 to 14 days	7 to 14 days	7 to 21 days	2 to 7 days	None of the above
Nurse practitioner	59,5	23,4	8,5	6,6	
Medical practitioner	65,5	14,8	8,4	10,2	
Other health care professional	61,3	20,7	10,4	6,1	

The majority of participants (≥60%) across all professional categories were able to identify the correct incubation period of 2-14 days.

Nurse practitioners (59.5%, 95% CI [55.8-63.0]) did not differ significantly from medical practitioners (65.5%, 95% CI [62.5-68.5]) on correct knowledge of the incubation period.

KNOWLEDGE OF COVID-19 TRANSMISSION

BY PROFESSIONAL CATEGORY

Legend: ■ Nurse practitioner ■ Medical practitioner ■ Other health care professional

Category	Nurse practitioner	Medical practitioner	Other health care professional
Contact with contaminated surfaces	77,4	74,9	72,8
Airborne transmission	43,2	46,7	41,3
All of the above	27,3	33,7	34,2
Faeco-oral transmission	20,9	20,5	23,5
None of the above			

Multiple responses on knowledge about COVID-19 transmission showed that the majority (over 70%) of all professional categories identified contact with contaminated surfaces as a mode of transmission.

Responses on contact with contaminated surfaces did not differ significantly between nurse practitioners, medical practitioners and other health care professionals (p>0.05)

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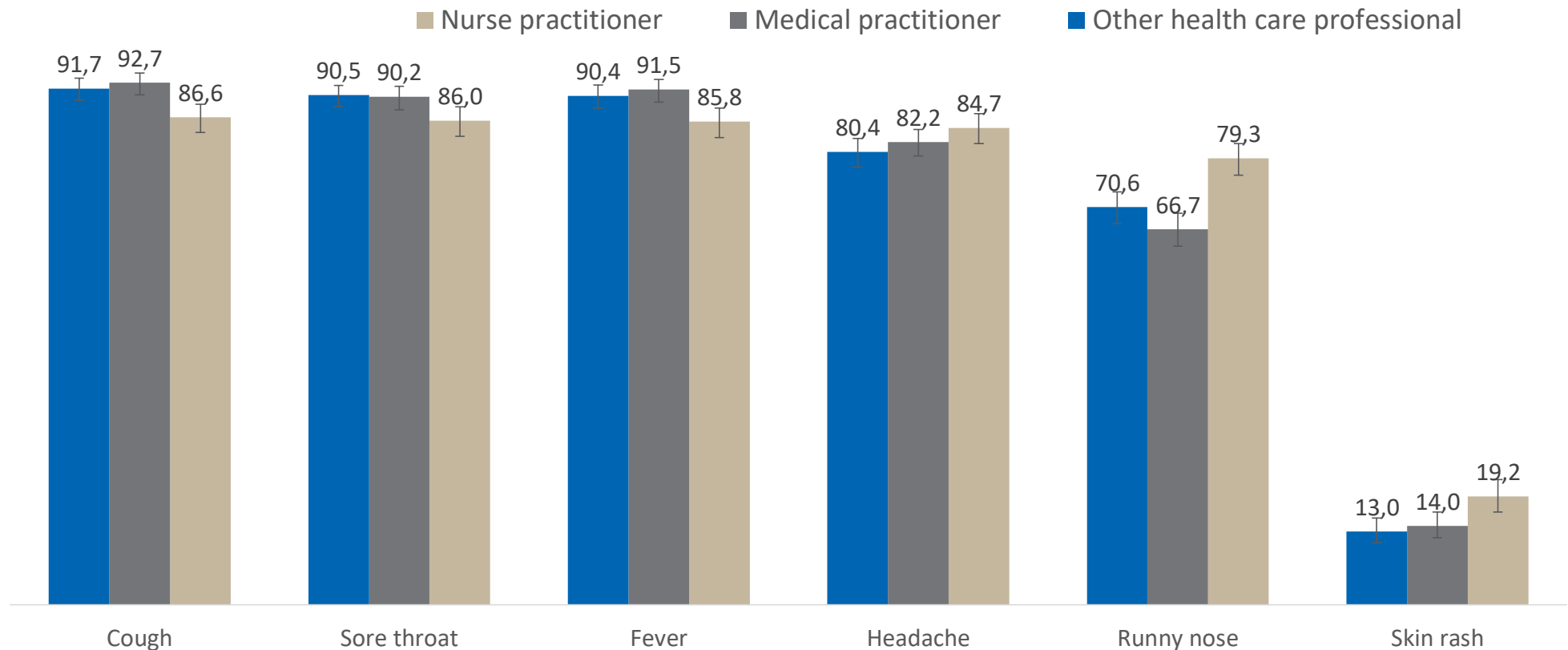
KNOWLEDGE OF MAIN SYMPTOMS OF COVID-19:
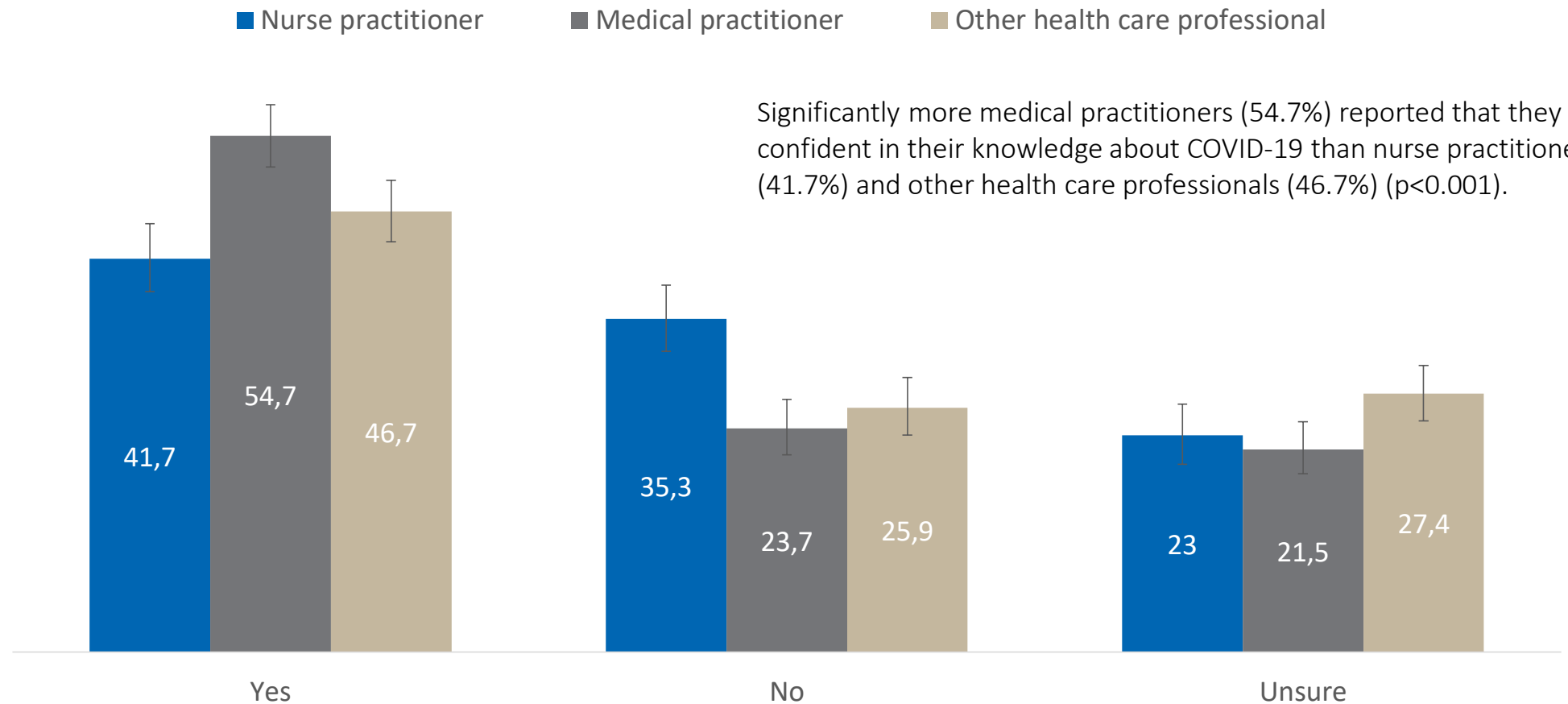
BY PROFESSIONAL CATEGORY

Over 85% correctly identified cough, sore throat and fever as main symptoms of COVID-19. Significantly fewer nurses correctly identified cough and fever as main symptoms compared to medical practitioners and other health care professionals ($p<0.001$)
Significantly fewer medical practitioners and other health care professionals identified runny nose as a main symptom ($p<0.001$).
Less than 20% incorrectly identified skin rash as a main symptom, with significantly more nurses selecting this option ($p<0.001$).

Legend: ■ Nurse practitioner ■ Medical practitioner ■ Other health care professional

Symptom	Other health care professional	Medical practitioner	Nurse practitioner
Cough	91,7	92,7	86,6
Sore throat	90,5	90,2	86,0
Fever	90,4	91,5	85,8
Headache	80,4	82,2	84,7
Runny nose	70,6	66,7	79,3
Skin rash	13,0	14,0	19,2

NB: Multiple selections were allowed

CONFIDENCE IN OVERALL KNOWLEDGE ABOUT COVID-19

BY PROFESSIONAL CATEGORY

■ Nurse practitioner   ■ Medical practitioner   ■ Other health care professional

Significantly more medical practitioners (54.7%) reported that they were confident in their knowledge about COVID-19 than nurse practitioners (41.7%) and other health care professionals (46.7%) (p<0.001).

Yes
41,7 / 54,7 / 46,7

No
35,3 / 23,7 / 25,9

Unsure
23 / 21,5 / 27,4

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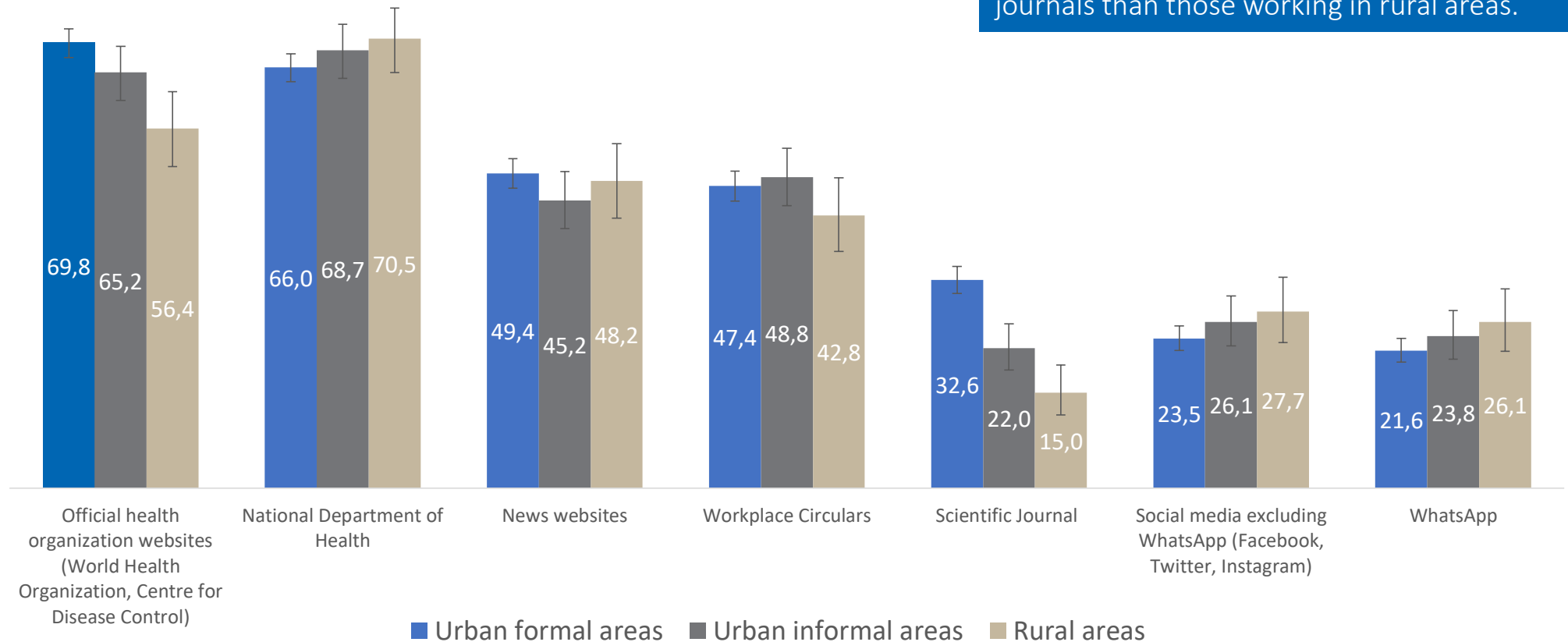Research Council

SOURCES OF INFORMATION ON COVID-19

INFORMATION SOURCES USED FOR COVID-19

BY LOCALITY TYPE

The NDOH and Official health organisation websites (WHO, CDC) were the most frequently reported information sources.* Over 60% reported using these sources.

Significantly more health professionals working in urban formal areas used official health organisation websites and scientific journals than those working in rural areas.

Chart values by category:

Source	Urban formal areas	Urban informal areas	Rural areas
Official health organization websites (World Health Organization, Centre for Disease Control)	69,8	65,2	56,4
National Department of Health	66,0	68,7	70,5
News websites	49,4	45,2	48,2
Workplace Circulars	47,4	48,8	42,8
Scientific Journal	32,6	22,0	15,0
Social media excluding WhatsApp (Facebook, Twitter, Instagram)	23,5	26,1	27,7
WhatsApp	21,6	23,8	26,1

■ Urban formal areas ■ Urban informal areas ■ Rural areas

* Participants were asked to select all the information sources they used. Therefore the information source categories are not mutually exclusive.
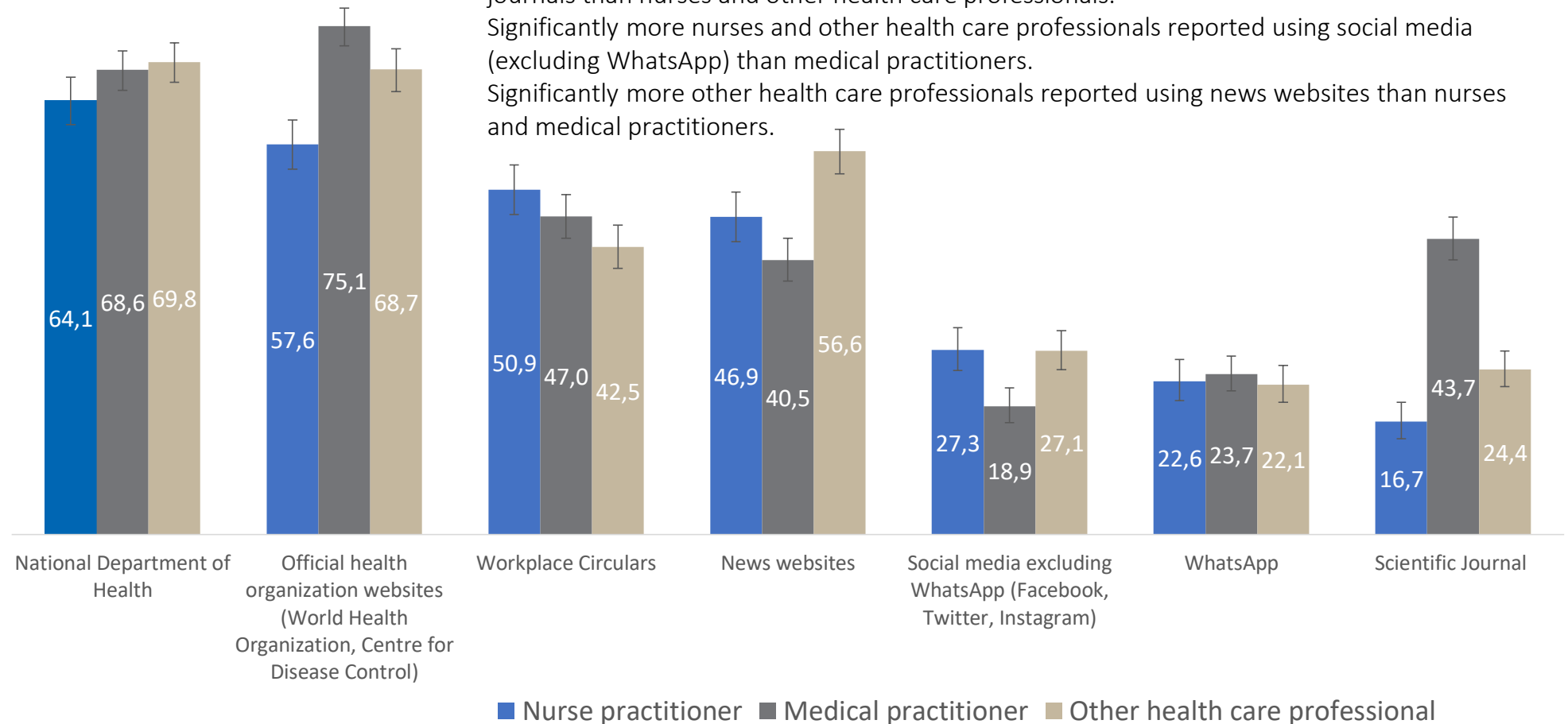
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INFORMATION SOURCES USED FOR COVID-19

BY PROFESSIONAL CATEGORY

Significantly more medical practitioners used official health organisation websites and scientific journals than nurses and other health care professionals.

Significantly more nurses and other health care professionals reported using social media (excluding WhatsApp) than medical practitioners.

Significantly more other health care professionals reported using news websites than nurses and medical practitioners.

	Nurse practitioner	Medical practitioner	Other health care professional
National Department of Health	64,1	68,6	69,8
Official health organization websites (World Health Organization, Centre for Disease Control)	57,6	75,1	68,7
Workplace Circulars	50,9	47,0	42,5
News websites	46,9	40,5	56,6
Social media excluding WhatsApp (Facebook, Twitter, Instagram)	27,3	18,9	27,1
WhatsApp	22,6	23,7	22,1
Scientific Journal	16,7	43,7	24,4

■ Nurse practitioner   ■ Medical practitioner   ■ Other health care professional

* Participants were asked to select all the information sources they used. Therefore the information source categories are not mutually exclusive.

TRAINING RECEIVED ON THE MANAGEMENT OF COVID-19

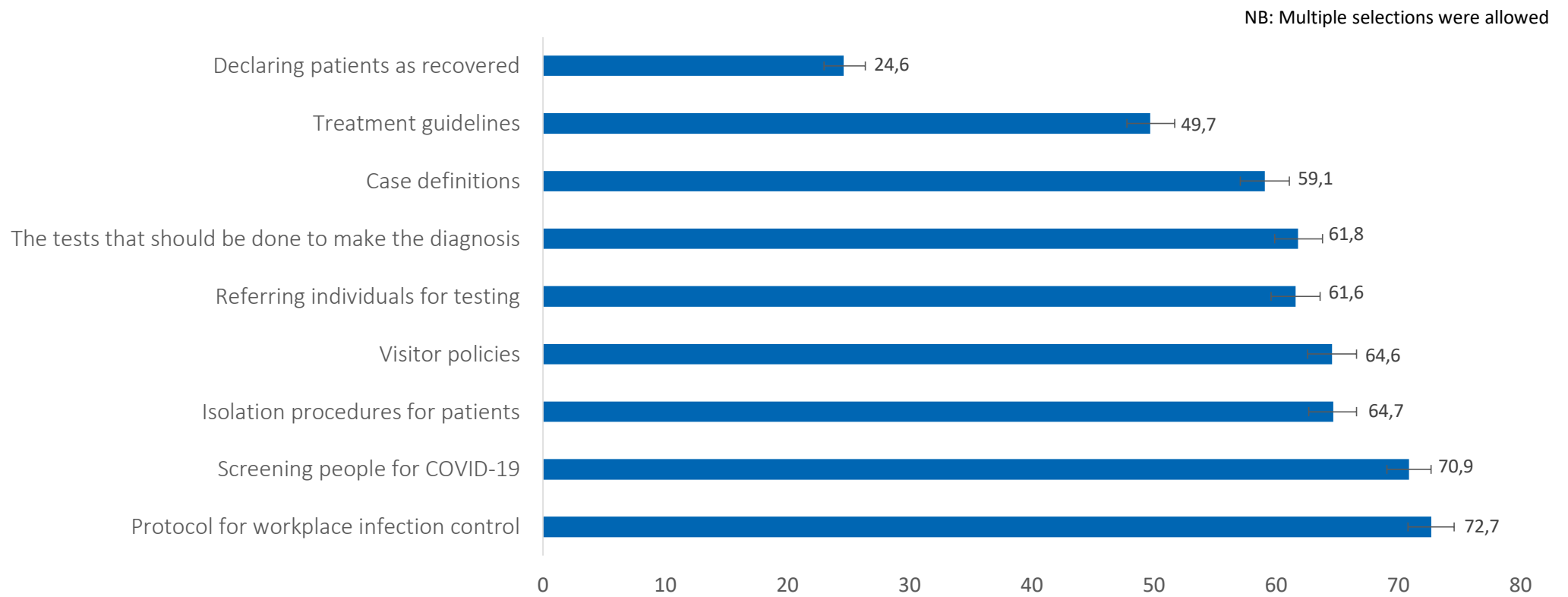# FORMAL TRAINING FOR COVID-19 MANAGEMENT

RECEIVED TRAINING OR INSTRUCTION IN THE FOLLOWING FIELDS:
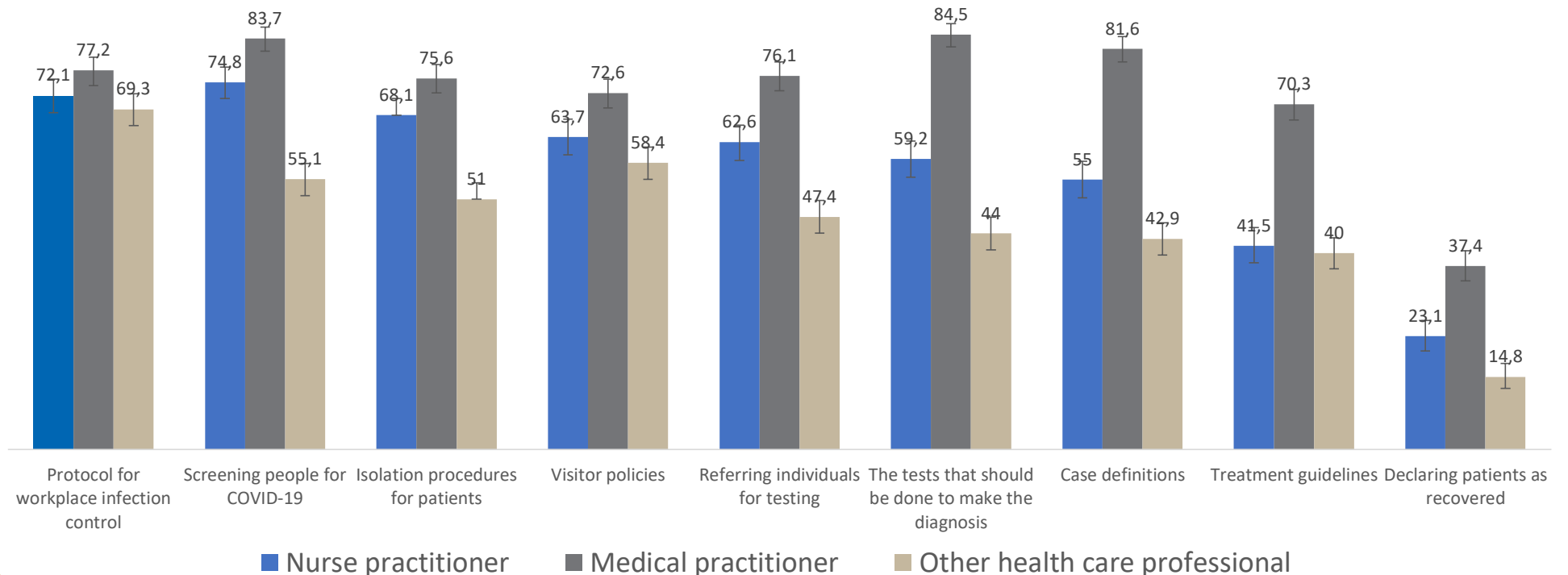
- The majority indicated they were trained/instructed in screening and workplace infection control (over 70% received training in these fields), followed by isolation procedures and visitor policies (65%).
- Only a quarter reported they had received training in declaring patients as recovered.

NB: Multiple selections were allowed

Field	Percentage
Declaring patients as recovered	24,6
Treatment guidelines	49,7
Case definitions	59,1
The tests that should be done to make the diagnosis	61,8
Referring individuals for testing	61,6
Visitor policies	64,6
Isolation procedures for patients	64,7
Screening people for COVID-19	70,9
Protocol for workplace infection control	72,7

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FORMAL TRAINING FOR COVID-19 MANAGEMENT

RECEIVED TRAINING IN THE FOLLOWING FIELDS BY PROFESSIONAL CATEGORY

- There were significant differences among professional categories for each training area (p<0.001).
  More medical practitioners reported receiving training in every training area compared to nurses and other health care professionals respectively.
- Results show differences in training received within each professional category.
  Among medical practitioners, over 70% reported being trained in each area except for declaring patients as recovered (37.4%).
  Among nurses, less than half reported being trained in treatment guidelines (41.5%) and declaring patients as recovered (23.1%).
- Among other health professionals, less than half reported being trained in referrals for testing (47.4%), case definitions (42.9%), treatment guidelines (40%) and declaring patients as recovered (14.8%).

Training area	Nurse practitioner	Medical practitioner	Other health care professional
Protocol for workplace infection control	72,1	77,2	69,3
Screening people for COVID-19	74,8	83,7	55,1
Isolation procedures for patients	68,1	75,6	51
Visitor policies	63,7	72,6	58,4
Referring individuals for testing	62,6	76,1	47,4
The tests that should be done to make the diagnosis	59,2	84,5	44
Case definitions	55	81,6	42,9
Treatment guidelines	41,5	70,3	40
Declaring patients as recovered	23,1	37,4	14,8

CONFIDENCE IN THE FIELDS OF TRAINING OR INSTRUCTION RECEIVED

Training Areas where confidence* was high or moderate
Generally over 80% expressed moderate or high confidence in all the training areas in which they reported receiving training or instruction. The exception was visitor policies, where 53% had high confidence in their training in this regard.

Training Areas where confidence* was low
Just over 20% lacked confidence in treatment guidelines. Approximately 16% lacked confidence in declaring patients as recovered.
Between 10% and 15% reported low confidence in the other training fields.

	Low	Moderate	High
Screening people for COVID-19	14,5	42,6	42,9
Referring individuals for testing	11,6	41,9	46,5
The tests that should be done to make the diagnosis	15,2	37,7	47,0
Case definitions	14,3	41,6	44,1
Protocol for workplace infection control	11,4	39,6	49,0
Isolation procedures for patients	14,0	40,4	45,6
Treatment guidelines	20,1	45,5	34,4
Visitor policies	10,8	36,6	52,6
Declaring patients as recovered	15,9	43,0	41,1

- Percentages are of those who reported having received training or instruction in each field

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COVID-19 AND RISK PERCEPTION

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SELF-PERCEIVED RISK OF CONTRACTING COVID-19
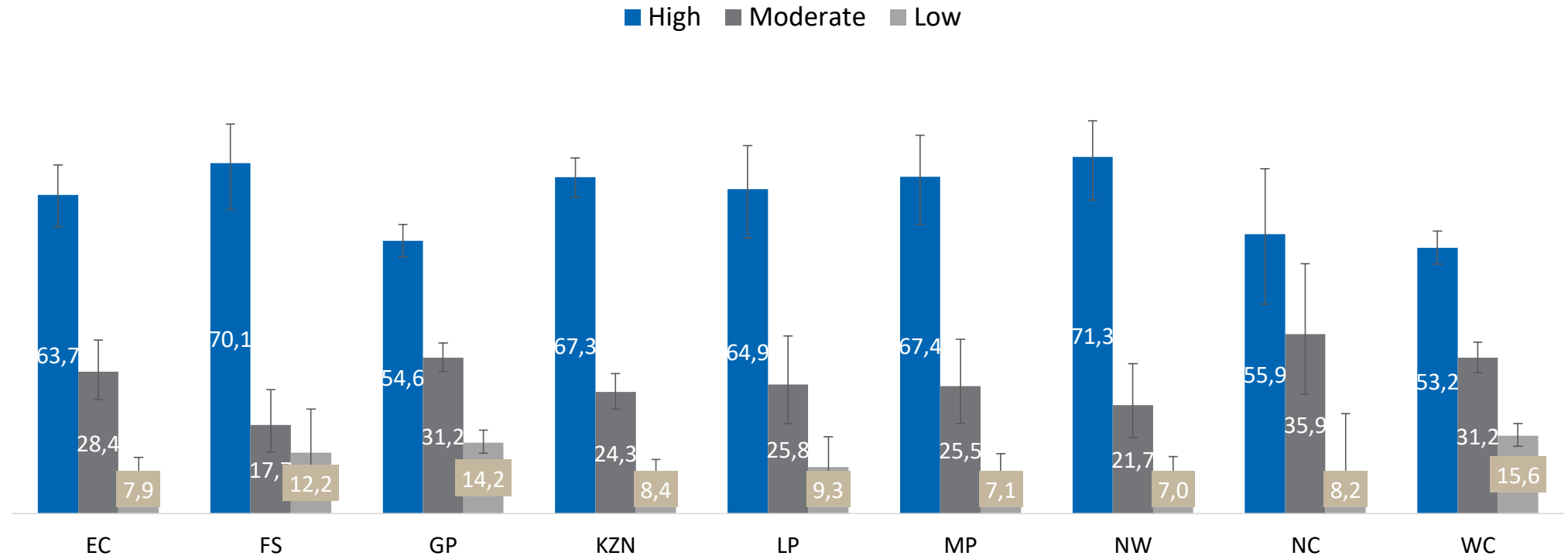
BY PROVINCE

Participants had a significantly high self-perceived risk of contracting COVID-19 (p<0.001), and this was the same across all the provinces. High risk perception was highest in the North West (71.3%) and Free State (70.1%) and lowest in the Western Cape (53.2%) and Gauteng (54.6%).
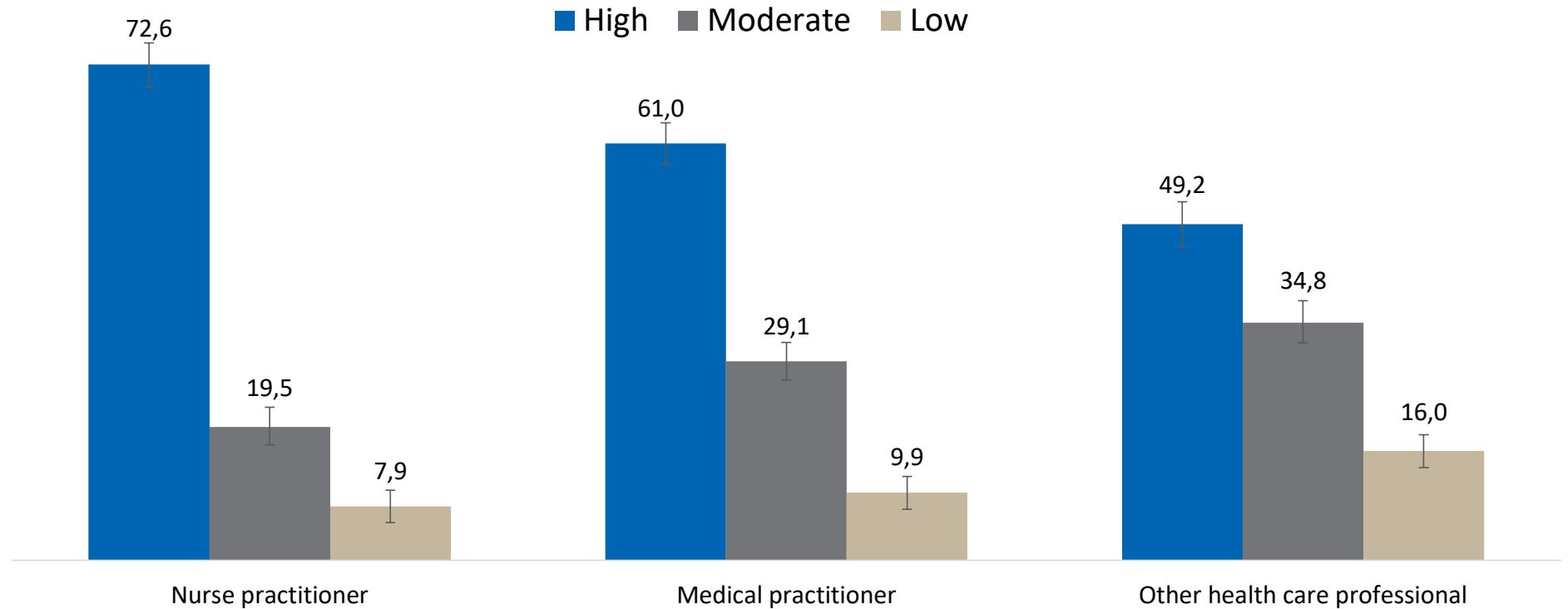
SELF-PERCEIVED RISK OF CONTRACTING COVID-19

BY LOCALITY TYPE
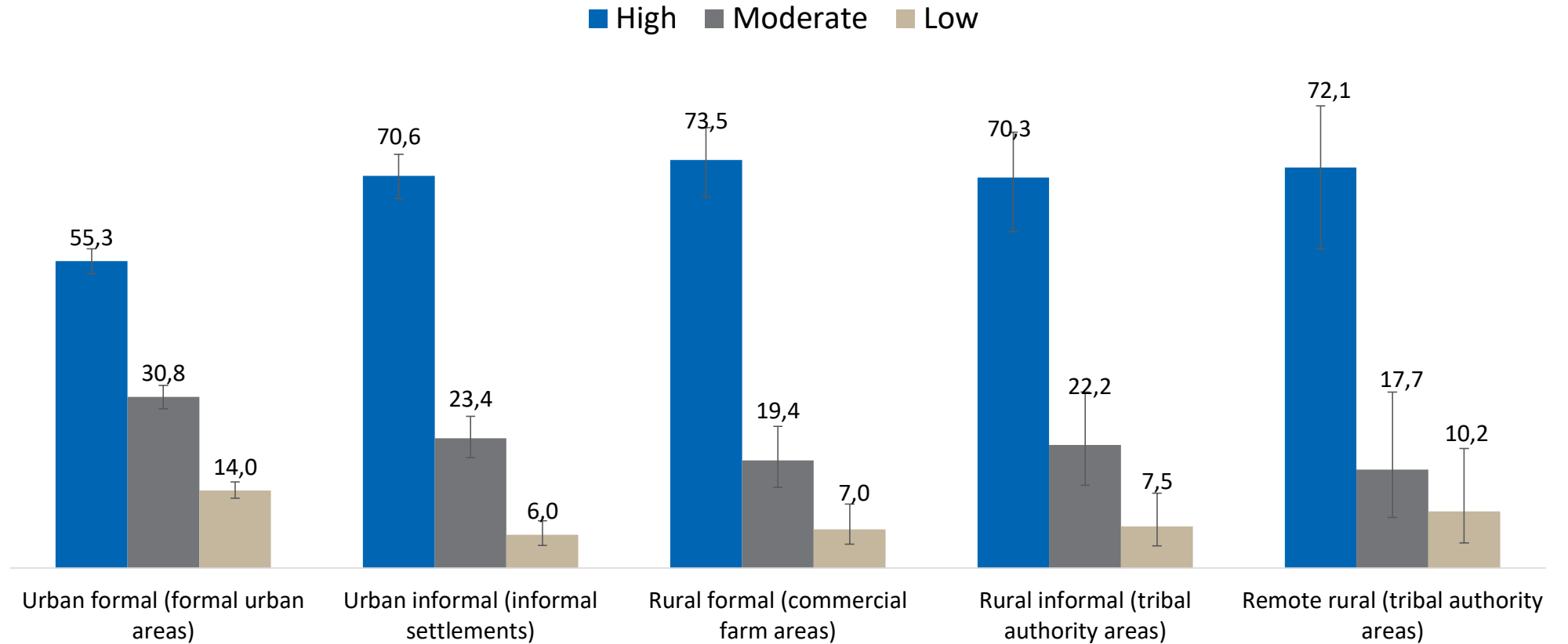
Participants had a significantly high self-perceived risk of contracting COVID-19 (p<0.001), and this was the same across all the locality types but lower in urban formal areas.

SELF-PERCEIVED RISK OF CONTRACTING COVID-19

BY PROFESSIONAL CATEGORY

Nurses had the highest self perceived risk among all professional categories (p<0.001).

SELF-PERCEIVED RISK OF CONTRACTING COVID-19

BY WHETHER THEY WERE CONFIDENT IN THEIR OVERALL KNOWLEDGE ABOUT COVID-19
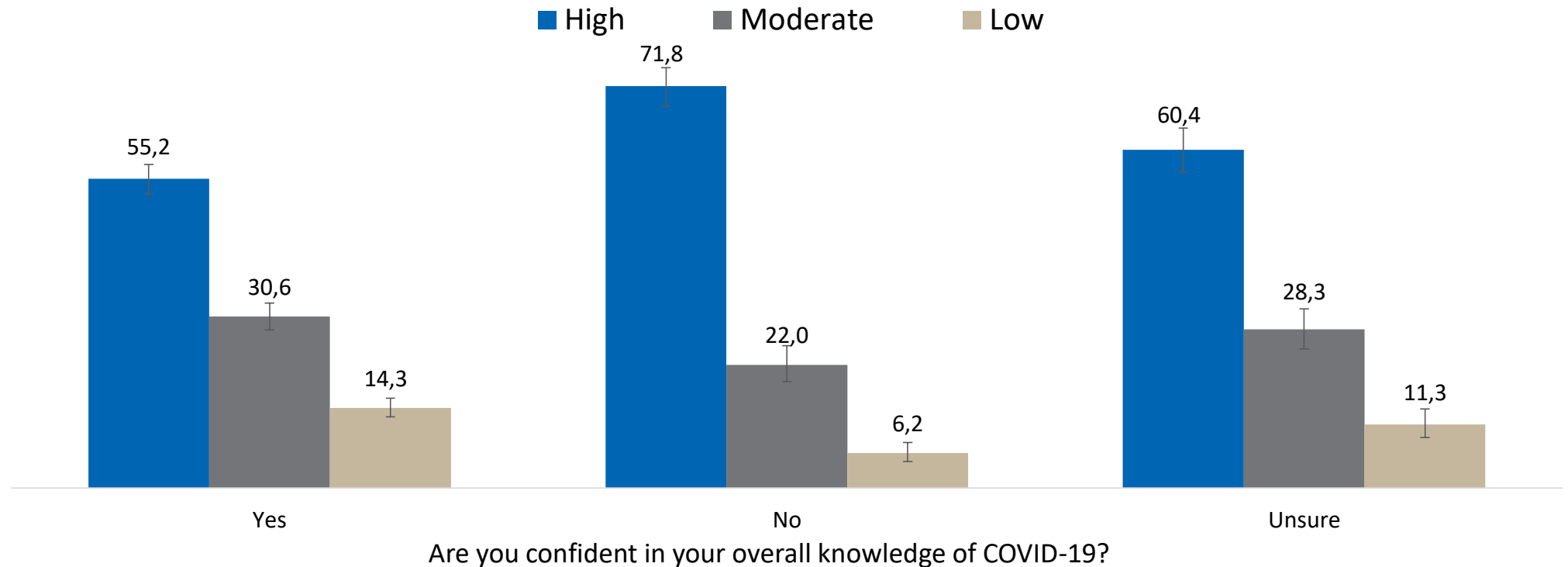
There was a significant difference in self-perceived risk of contracting COVID-19 by the overall confidence in knowledge about the disease (p<0.001). Those who were not confident in their overall knowledge had a high self perceived risk.

RISK FACTORS FOR CONTRACTING COVID-19

NB: Multiple selections were allowed

Risk Factor	Percentage
My profession as HCW makes me more susceptible	76,9
The general public is not following all the guidelines to…	64,1
Not having adequate PPE	53,9
The facility in which I work in	36,6
My place of work is not equipped to deal with COVID-19	35,1
The section of the facility in which I work	27,1
My other underlying health conditions	26,0
Inadequate staff levels at my place of work	21,1
My age	20,9
My long working hours	17,3
I use public transport to come to work	10,4
My family members do not adhere to guidelines to…	4,4

The majority of health professionals (76.9%) felt that their profession makes them more susceptible to contracting COVID-19

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TO WHAT EXTENT DO THE RISK FACTORS PUT YOU AT RISK FOR COVID-19

Risk factor	High	Moderate	Low
My profession as HCW makes me more susceptible	81,4	78,0	48,8
The general public is not following all the guidelines to prevent transmission	65,9	61,7	59,8
Not having adequate PPE	60,4	46,9	35,1
The facility in which I work in	42,6	30,4	18,3
My place of work is not equipped to deal with COVID-19	41,6	28,8	14,3
The section of the facility in which I work	33,6	19,9	8,9
My other underlying health conditions	28,5	22,3	21,6
Inadequate staff levels at my place of work	27,0	13,1	8,0
My long working hours	21,6	12,4	5,1
My age	19,4	20,5	30,0
I use public transport to come to work	12,4	7,4	6,9
My family members do not adhere to guidelines to prevent transmission	4,9	3,9	2,2

Participants who felt that their profession makes them more susceptible to COVID-19 had a significantly higher self-perceived risk of contracting the disease (p<0.001).

PERSONAL PROTECTIVE EQUIPMENT

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GUIDELINES

The NDOH COVID-19 Disease Infection Prevention and Control Guidelines (2020) indicate that:

- All forms of PPE (masks, eye protection (goggles/visor), apron/gown, and gloves) are required for all healthcare situations, except triage of patients. In patient triage, patients are screened using a symptoms-based questionnaire, where only a surgical mask is required for the healthcare professional while maintaining a 1.5 meter distance from the patient.

- The type of mask to be used depends on the situation: N95 respirator masks are recommended for aerosol generating procedures, including sample collection. In all other situations, surgical masks are recommended.

- Aprons are the preferred PPE under most situations, where gowns are only suggested as a possible alternative in procedures or environments where an aerosol may be produced.

INFECTION PREVENTION AND CONTROL MEASURES

Overall over two thirds of participants expressed the need for all forms of PPE, with the exception of rubber boots (58%).

The majority (>90%) expressed the need for environmental controls, eye shields/goggles, gloves and N95 masks.

Category	Value
Rubber boots	57,7
Plastic aprons	65,3
Head cover	68,9
Space to debrief and for counselling	82,5
Infrastructure triage of patients	82,8
Infrastructure for social distancing	88,9
Gown or coverall	89,1
Environmental controls(well ventilated waiting, consultation &...	90,2
Eye shield/Goggles	91,3
Gloves	92,2
N95 Respiratory masks	94,3
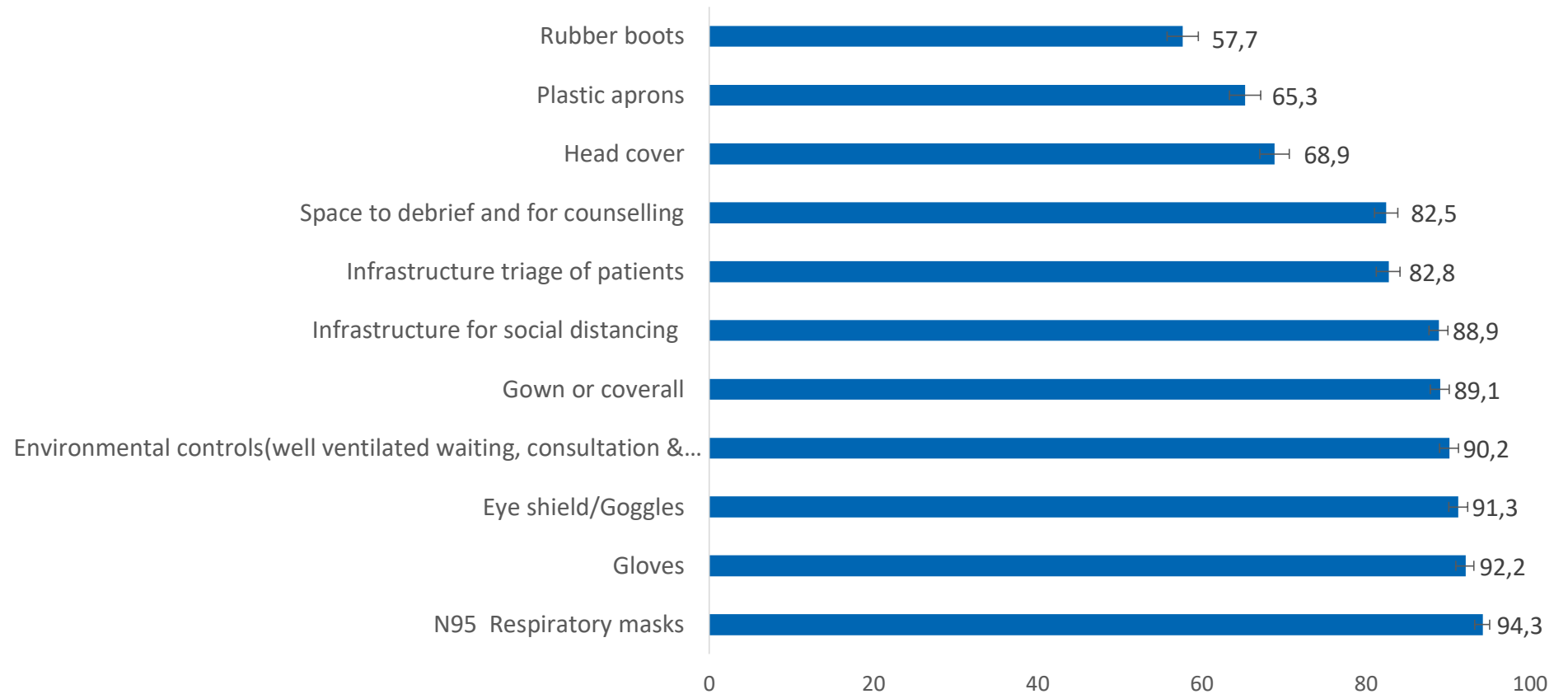
KNOWLEDGE OF THE TYPE OF PPE TO BE WORN

UNDER SPECIFIC CONDITIONS
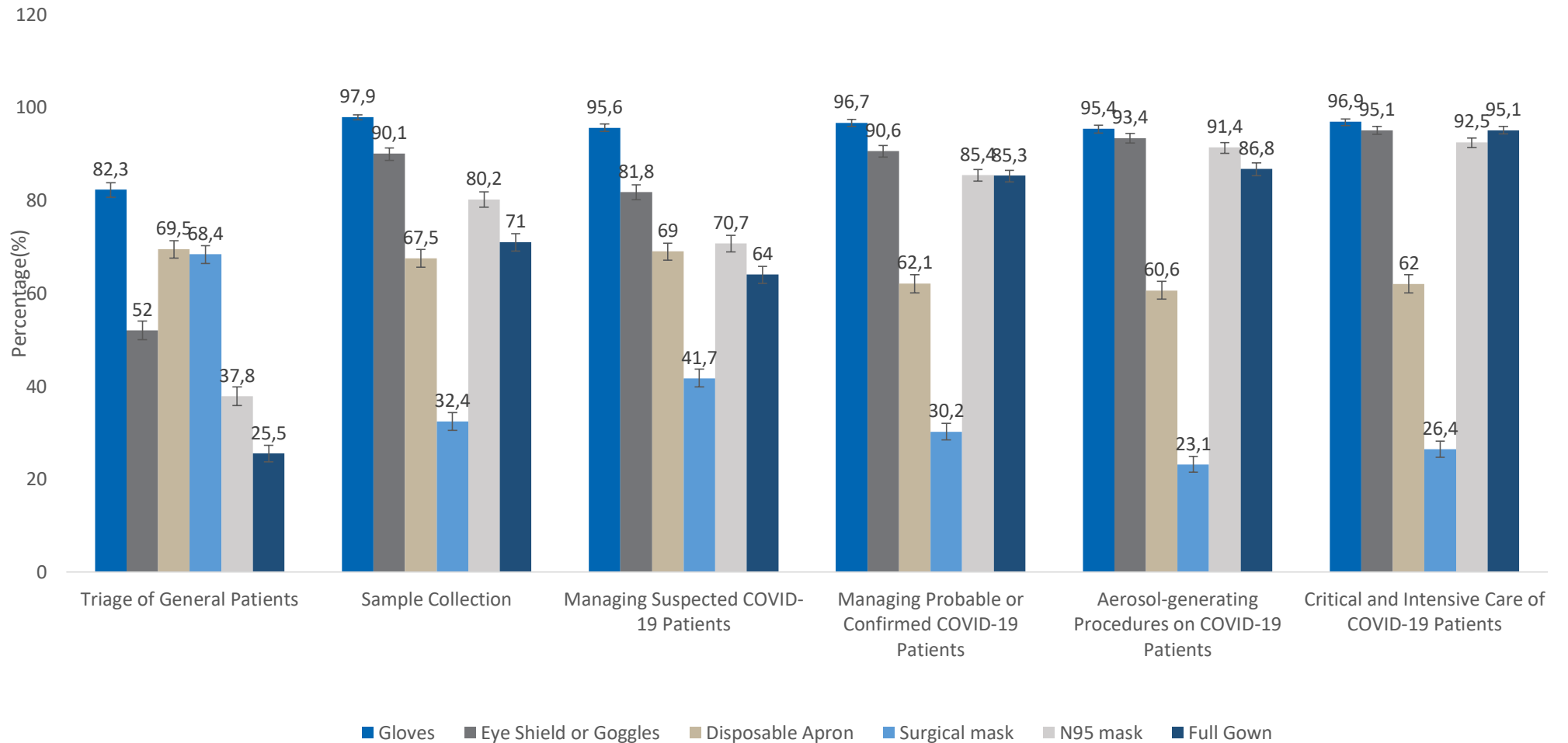
LEVEL OF CONFIDENCE IN USE OF PPE

Overall 45% of all health care professionals were confident in the donning, doffing and correct use of PPE. Overall confidence was higher in the use of PPE than in its availability and accessibility.
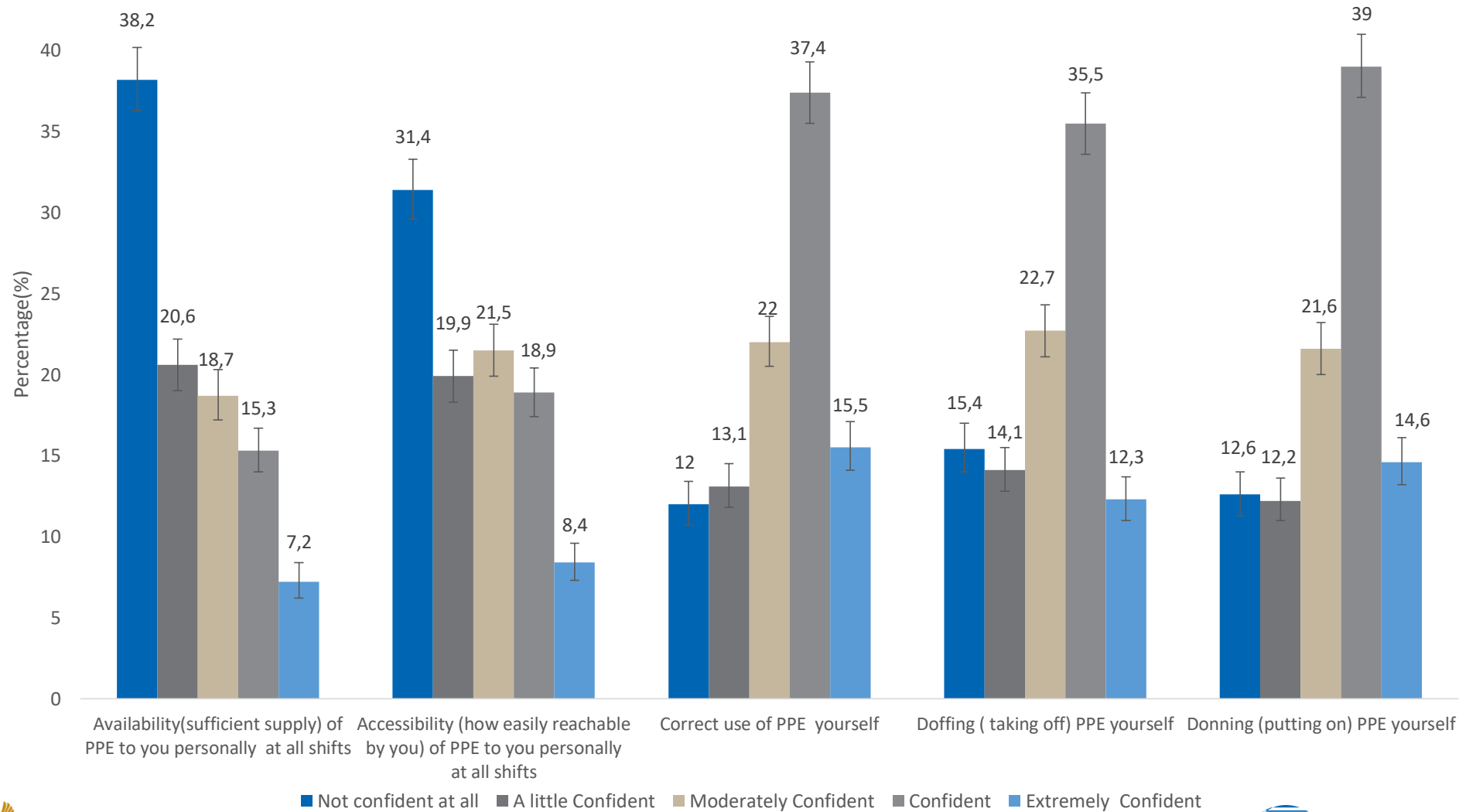
SELF-PERCEIVED RISK OF CONTRACTING COVID-19

BY CONFIDENCE FOR CORRECT USE OF PPE

■ High ■ Moderate ■ Low

	Not confident at all	A little Confident	Moderately Confident	Confident	Extremely Confident
High	72,3	62,7	58,8	60,1	57,3
Moderate	19,4	25,1	31,2	29,2	26,5
Low	8,3	12,2	9,9	10,7	16,2
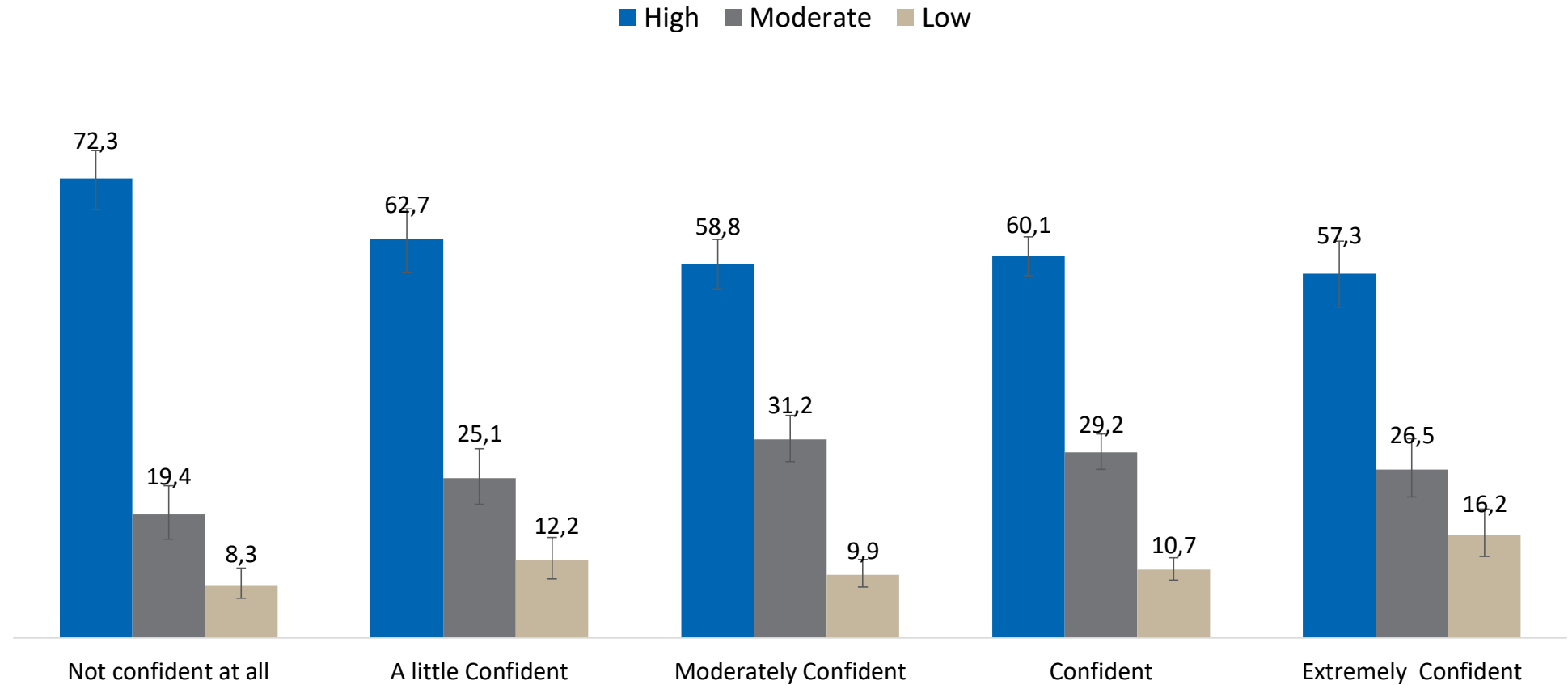
Participants who reported that they were 'not confident at all' about correct use of PPE had a significantly higher self-perceived risk of contracting COVID-19 ($p < 0.001$).

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GENERAL HEALTH AND WELLBEING

LEVEL OF CONCERN FOR PERSONAL AND FAMILY WELL-BEING

Legend: Not Concerned at all | Moderately Concerned | Highly Concerned | Extremely Concerned

Category	Not Concerned at all	Moderately Concerned	Highly Concerned	Extremely Concerned
Risk of passing infection to family members	6,5	21,3	25,9	46,4
Personal mental health	21,0	33,6	24,2	21,2
Fears for my family members and for my health		25,9	30,2	40,6
Potential for personal self-isolation or quarantine	15,4	32,1	26,7	25,8
Managing personal needs	16,8	35,7	26,6	21
Managing family responsibilities	11,1	28,3	29,4	31,2
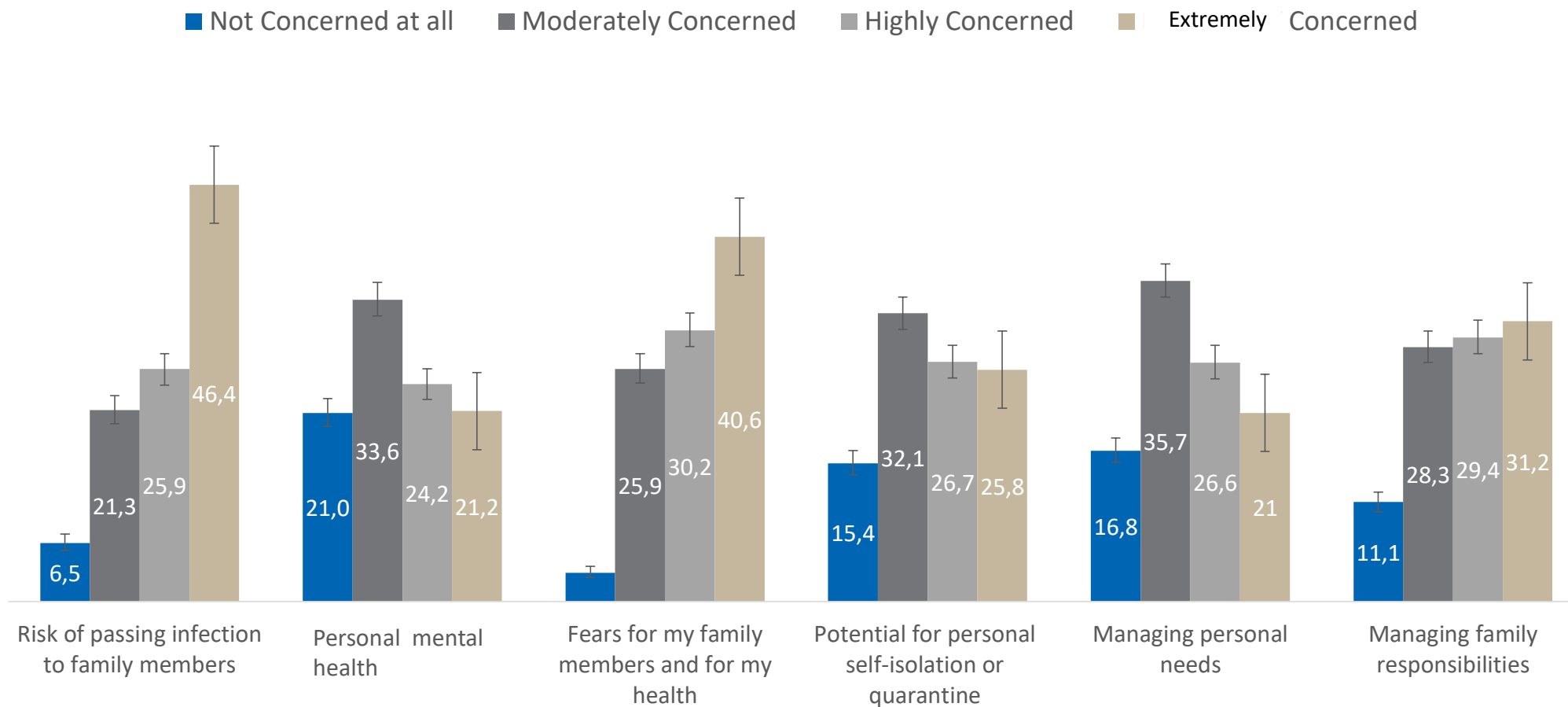
The level of concern for personal and family well-being and for passing COVID-19 infection to family members was significantly higher than for other possible issues of concern (p<0.001).

LEVEL OF CONCERN FOR FAMILY MEMBERS AND PERSONAL HEALTH

BY PROFESSIONAL CATEGORY

Legend: ■ Nurse practitioner ■ Medical practitioner ■ Other health care professional

	Not Concerned at all	Moderately Concerned	Highly Concerned	Extremely Concerned
Nurse practitioner	24,1	24,5	35,3	45,2
Medical practitioner	33,6	36,3	31,2	25,9
Other health care professional	42,3	39,3	33,5	28,9
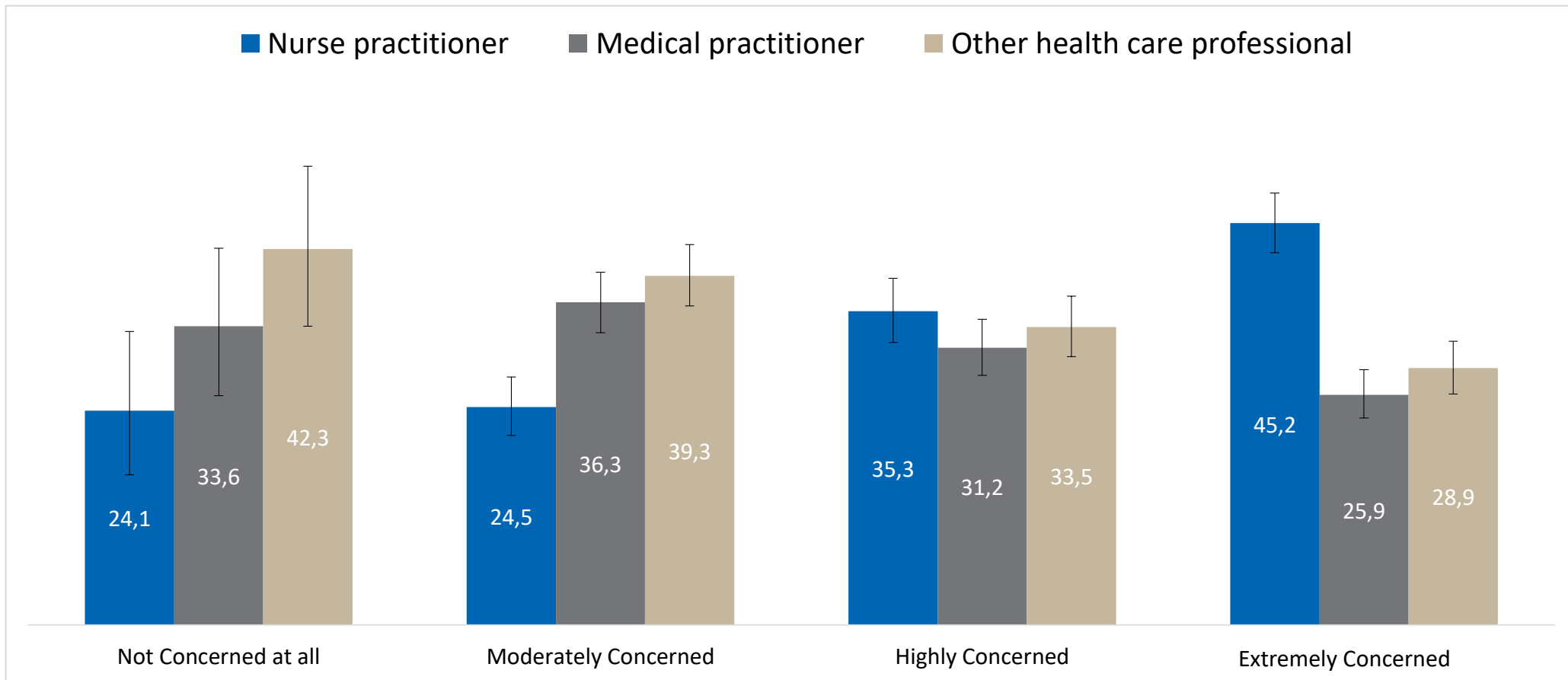
A higher proportion of nurses (45.2%) were extremely concerned about family members and personal health. The level of concern was significantly different by profession (p<0.001)

LEVEL OF CONCERN FOR PASSING INFECTION TO FAMILY MEMBERS

BY PROFESSIONAL CATEGORY

- Nurse practioner
- Medical practioner
- Other health care professional
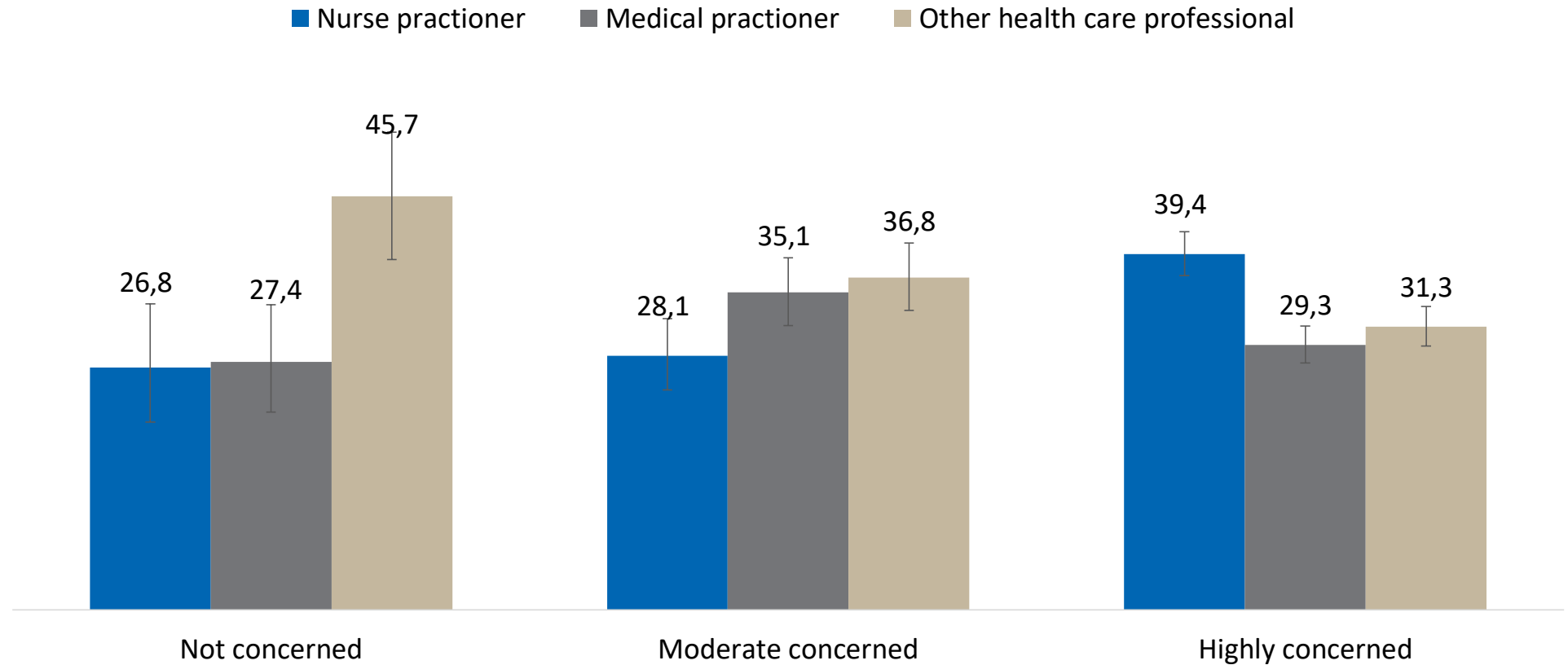
A higher proportion of nurses (39.4%) were highly concerned about passing infection to family members. The level of concern was significantly different by profession (p<0.001)

PSYCHOLOGICAL DISTRESS

BY PROFESSIONAL CATEGORY AND EMPLOYMENT SECTOR

- Overall approximately 20% of all participants were severely distressed, whilst just over half the sample had low distress.
- Psychological distress was significantly higher among nurses than medical practitioners and other health care professionals (p<0.001), and among public sector employees than those in the private or other sectors (p=0.012).

Legend: Low distress | Mild distress | Moderate distress | Severe distress

Professional category chart:
- Nurse practitioner: 49,7 | 14,1 | 11,5 | 24,7
- Medical practitioner: 59,4 | 16,3 | 10 | 14,3
- Other health care professional: 52,6 | 16,7 | 12,2 | 18,5

Professional category

Employment sector chart:
- Public: 47,6 | 16,8 | 11,7 | 23,9
- Private: 59,1 | 15 | 10,7 | 15,3
- Other: 59,3 | 14,8 | 10,7 | 15,2

Employment sector
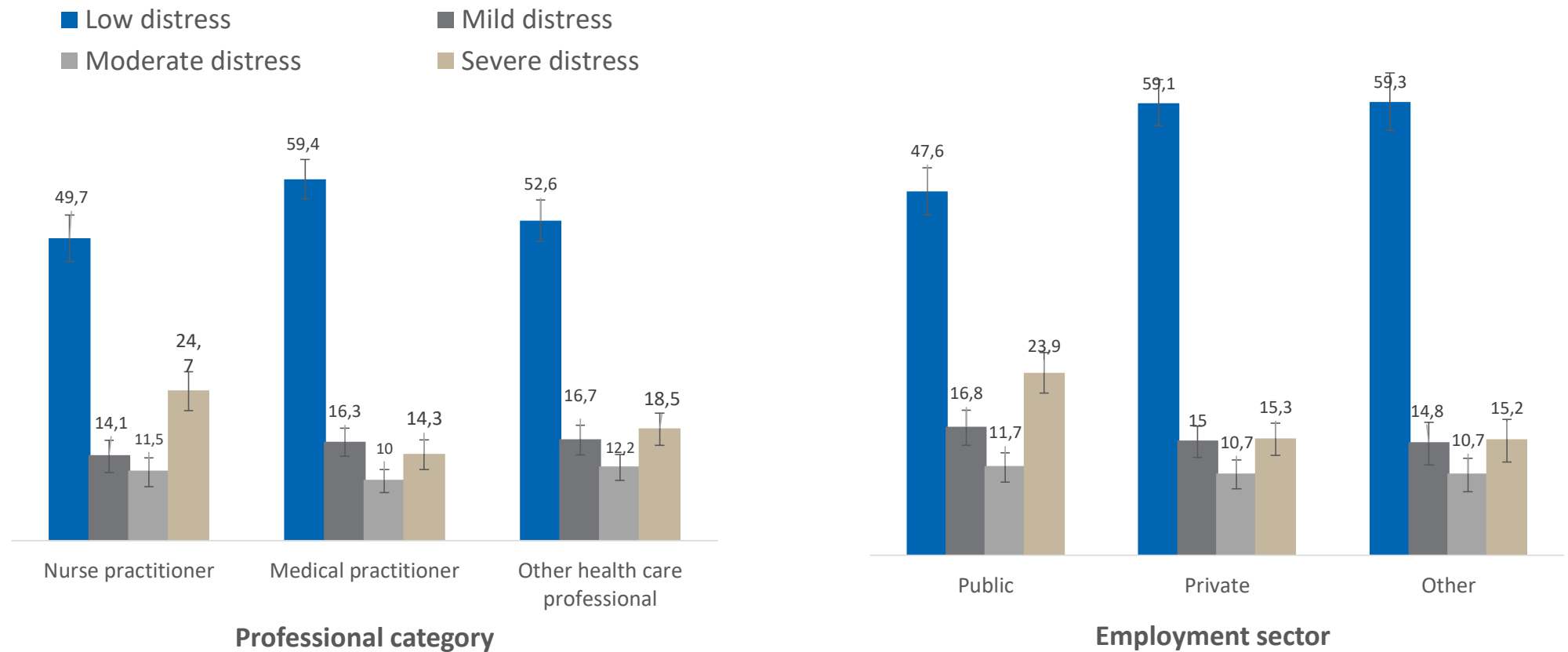
GENERAL HEALTH AND WELL-BEING INDEX

Amongst nurses general health and well-being was the lowest (44.4%) as compared to the medical practitioners and other health care professionals. There was a significant difference in the general health and well-being among the professional categories (p<0.001).

Legend: ■ High ■ Moderate ■ Low

Nurse practitioner: High 29,6 / Moderate 34,9 / Low 44,4
Medical practitioner: High 30,6 / Moderate 30,0 / Low 31,0
Other health care professional: High 39,8 / Moderate 35,2 / Low 24,5
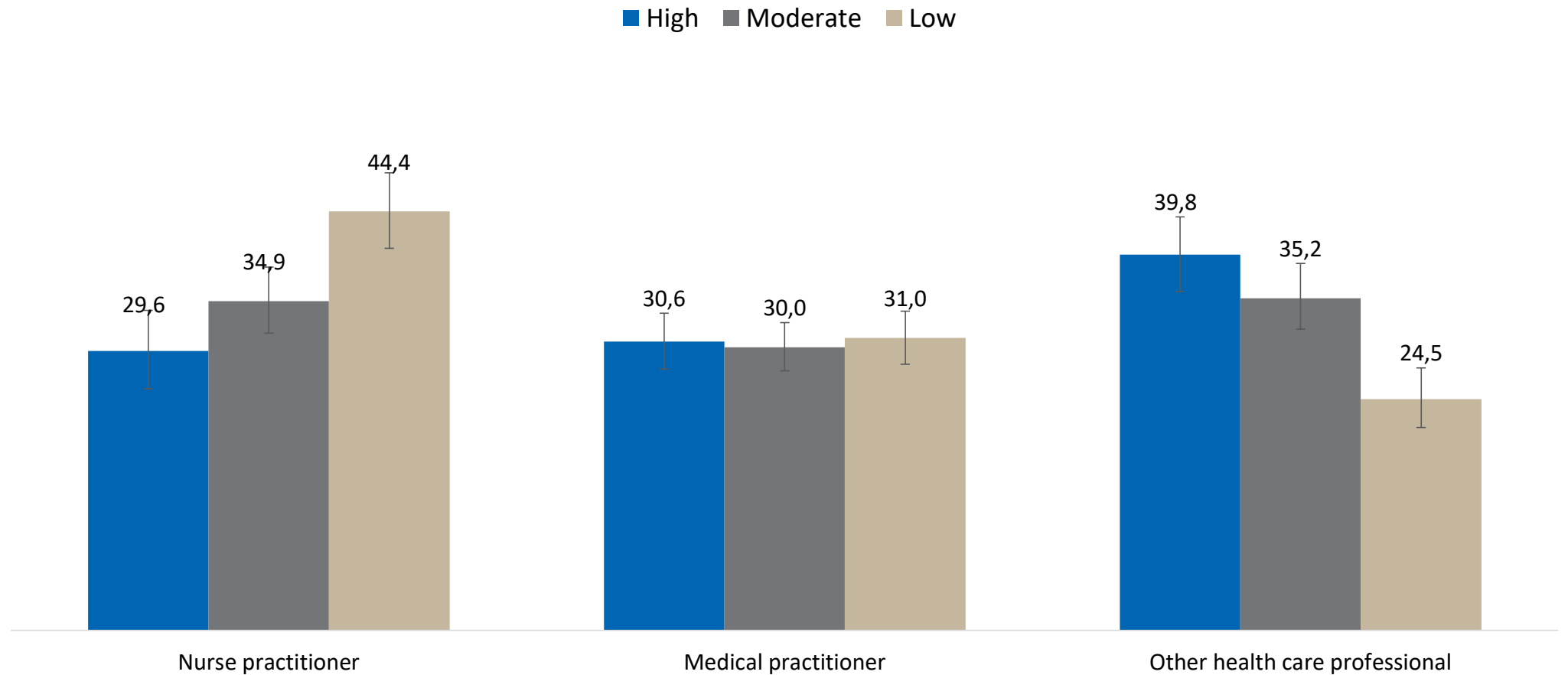
PSYCHOLOGICAL DISTRESS BY GENERAL HEALTH AND WELL-BEING INDEX

There was a significant inverse association between psychological distress and general wellbeing (p<0.05), in that participants with high psychological distress had low levels of general health and well-being. On the other hand health professionals that had high general well-being had low level of psychological distress.
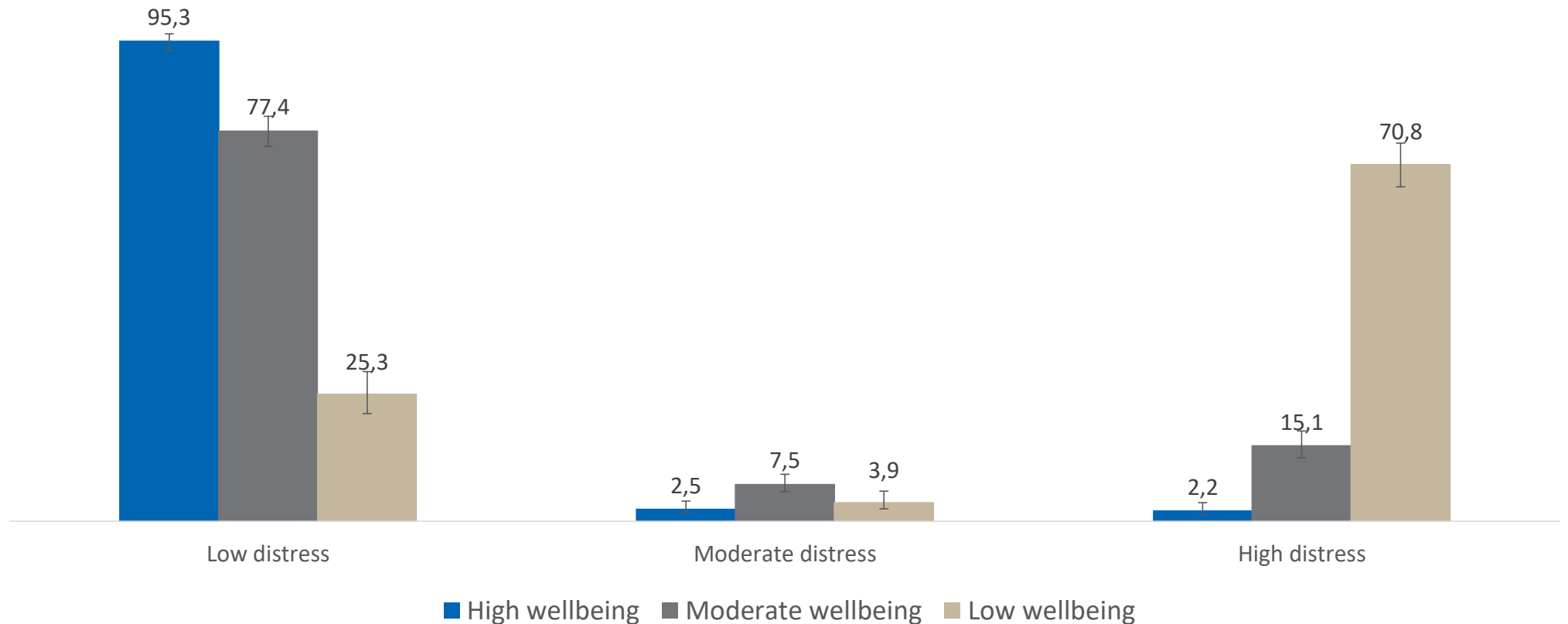
KEY MESSAGES: FROM DATA TO ACTION

KEY MESSAGE 1: SOCIO-DEMOGRAPHICS

What the findings tell us	Logic for change from data to action	Health Systems Improvement Strategy (Individual, professional, system)
• 4 in 5 participants were female • 3 in 5 participants were black African • 3 in 5 participants came from urban formal areas • Half of the participants came from the 4 most affected provinces (GP, WC, KZN, EC) • Nurse practitioners comprised 2 in 5 of the participants • Half of the participants worked in the public health sector whilst a third worked in the private sector • About a quarter of participants worked in either the NGO, civil society or academic sector –designated as neither public nor private • 1 in 10 participants were over 60	• The findings speak to the responsiveness of the health sector in participating in the survey • Health professionals over the age of 60 are at greater risk of poorer COVID-19 outcomes • It is important to understand and designate professional categories and sector correctly	• It underscores the importance of adequately engaging all health professionals in research so that inputs from a diverse range of perspectives within the healthcare sector can be considered to inform policy interventions • Need to ensure better representation of different groups to have a complete picture of needs. Enhanced methods for both recruitment and data collection should be employed to be more inclusive (beyond online surveys) • Targeted surveys during disease outbreaks should be part of the routine response mechanism and must be able to rapidly provide key information about the frontline workforce

KEY MESSAGE 2: KNOWLEDGE

What the findings tell us	Logic for change from data to action	Health Systems Improvement Strategy/Policy (Individual, professional, system)
• 2 in 5 participants did not know the correct COVID-19 incubation period • 3 in 4 of all professional categories correctly identified contact with contaminated surfaces as a mode of transmission. • 2 in 5 of all professional categories incorrectly identified COVID-19 as being airborne. • Knowledge of the correct symptoms is high at the time of data collection • Overall, half of the healthcare professionals were confident on their knowledge about COVID-19 • Nurse practitioners lacked confidence in their knowledge about COVID-19 more than the other categories	• Even though COVID-19 is droplet spread, the small droplets containing the virus can be suspended in the air – this speaks to the uncertainty and complexity of managing a new disease at a clinical level • What must be noted is that in a new pandemic additional symptoms or changes in criteria come to the fore as evidence emerges (such as loss of taste and smell) • Special attention may need to be paid to nurse practitioner training to further build their confidence	• Interventions need to be in place to address knowledge gaps in public health emergencies • At a policy level, the uncertainty relating to new pandemics should be managed effectively and pro-actively by government because health professionals are expected to provide answers to the public within a vacuum of uncertainty in the face of a new pandemic • Communication of information must be cascaded at all levels as it emerges from trusted sources. • Responsiveness to new evidence as it emerges is crucial

KEY MESSAGE 3: SOURCES OF INFORMATION

What the findings tell us	Logic for change from data to action	Health Systems Improvement Strategy (Individual, professional, system)

• Overall, two-thirds of health professionals consulted sources of information on COVID-19 from the National Department of Health, from WHO, CDC
• Compared to health professionals in rural areas, health professionals in urban formal areas relied more on WHO/CDC websites and scientific journals.
• Similarly, medical practitioners vs. all other health professionals relied on WHO/CDC websites (3 in 4 vs 3 in 5) and scientific journals (2 in 5 vs 1 in 5) as sources of information
• Other health professionals used social media (1 in 4 vs 1 in 5) and news websites (3 in 5 vs 2 in 5) more than medical practitioners
	• In an emerging epidemic all categories of health professionals consult different sources of information in order to care for patients	• Department of health should establish a strong communication mechanism
		  • Consolidated clinical information could be disseminated by means of a knowledge synthesis process managed by government
		  • Public health journalist/health correspondents should work with government to ensure that correct, non-sensationalist information is disseminated
		• Information needs to be timely, regular, specific given the dynamic nature of a pandemic

KEY MESSAGE 4: TRAINING

What the findings tell us	Logic for change from data to action	Health Systems Improvement Strategy (Individual, professional, system)
• About two thirds of health professionals received some form of COVID-19 related training • Only 1 in 2 were trained in treatment guidelines and 1 in 4 in declaring patients as recovered • There is a large difference in training received between medical vs nurse practitioners on treatment guidelines, case definitions as well as tests that should be done to confirm diagnosis • The fields in which health professionals were least frequently trained in, i.e. treatment guidelines and declaring patients as recovered, were also the fields in which confidence in training received was lowest	• The data highlights the status and experiences of training among health professionals in the early days of the pandemic • There are variations of training amongst categories of health professionals, which has an impact on level of confidence • There were areas of training that were not covered at the time of this study	• Training must be provided timeously before a high case load and throughout as new information comes to the fore • Training has to cover the entire scope of patient and disease management • Training should be done across all categories of health professionals equitably which should result in confidence of knowledge • Building confidence should be intentional and ideally aimed at healthcare teams rather than individual categories

KEY MESSAGE 5: RISK PERCEPTION

What the findings tell us	Logic for change from data to action	Health Systems Improvement Strategy (Individual, professional, system)
• Risk perception is lowest in GP and WC. These are the provinces with the highest proportions of health professionals who work in urban formal settings. i.e. 84% of Gauteng participants worked in urban formal areas, 78% of WC participants worked in urban formal areas. • Risk perception is highest in NW and FS	• GP and WC had the highest number of cases at the time of the survey. Cases were also presenting more frequently in urban formal facilities. The health professionals here were more likely to have experienced COVID-19 management first hand or in their facility/practice. At this relatively early phase, their facilities would have successfully managed these patients. This may have reduced fears and panic about COVID-19 management because it became something familiar and manageable instead of unknown • Urban formal health professionals also consulted scientific literature the most, and may be more knowledgeable and have high trust in the information about COVID-19, therefore making their risk perceptions more realistic. • Conversely in areas/environments/professions where COVID-19 management is unfamiliar and uncertain, (e.g. NW, FS provinces) the risk can be higher.	The health system improvement strategy should be to: 1) Train health professionals to become more knowledgeable and self-efficacious in outbreaks such as COVID-19 by: - send streamlined communications that are targeted, tailored and sensitive to ensure - All communication must be developed to avoid the negative consequences of fear, stigma and denial - Provide comprehensive training in all the fields that will be required in their jobs - Have practical training and application so that health professionals feel confident in them. 2) Ensure safer work environments w.r.t. adequate structural measures and PPE for outbreaks such as COVID-19 3) Information sharing between facilities across provinces / districts to share experiences of COVID-19 management, and therefore place risk into realistic contexts.

KEY MESSAGE 6: RISK PERCEPTION

What the findings tell us	Logic for change from data to action	Health Systems Improvement Strategy (Individual, professional, system)
• Those who were not confident in their overall knowledge about COVID-19 reported a higher self perceived risk • Nurses had the highest self perceived risk among all professional categories	• Protection Motivation Theory (PMT): general perceptions of the severity/ vulnerability of a health threat determines one's risk perception about a disease • Perceptions about the severity and vulnerability of the health worker-related risk can be influenced by knowledge and self efficacy in managing the infection in patients. Perceptions must also be viewed in the context of the individuals' environments. • Higher risk perceptions occur when the individual has 1) less perceived control over an outcome, 2) when there's heightened awareness about the disease (e.g. media coverage), 3) when there is uncertainty surrounding the disease and risks, 4) when the risk is novel rather than familiar and 5) when there is less trust in information sources (among other factors). • Nurses would be expected to have higher risk perceptions given the nature of their work and more frequent close contact with patients. • Nurses reported lower knowledge, less training and were less confident in their training fields which could explain their high risk perception. As a result of lower knowledge, training and self efficacy, and more frequent personal contact with patients, they may experience 1 and 2 more intensely i.e. heightened awareness, and feel a loss of control in their situational environment.	Given factors 1-5, a risk perception may be heightened or exaggerated and differ from the actual or real risk. Keeping the risk in perspective will help prevent anxiety, panic and counterproductive coping strategies.

KEY MESSAGE 7: RISK FACTORS

What the findings tell us	Logic for change from data to action	Health Systems Improvement Strategy (Individual, professional, system)

• Three quarters of health professionals felt that their occupation placed them at higher risk.
• A third of health professionals felt that where they worked put them at greater risk
• Two thirds felt that the general population are not following the transmission guidelines and therefore putting health professionals at risk
• Over half of health professionals felt they did not have adequate PPE which put them at risk
• A quarter of health professionals felt that their underlying health conditions put them at risk of contracting COVID-19
	• Health professionals need to feel as safe and protected as possible, by having appropriately equipped work environments, structural measures for COVID-19 management, and adequate PPE.
	• Health professionals need to know what PPE is necessary in each situation, so that they do not inaccurately perceive lack of some types of PPE as putting them at increased risk.
	• COVID-19 management strategies in facilities must take into account health professionals with underlying health conditions
		• Health facilities need to have:
		  - Sufficient infrastructure/spaces and protocols for screening, referral, testing, managing and isolating patients.
		  - Ventilation and environmental controls
		  - Adequate PPE for all staff in accordance with IPC guidelines
		• Encourage and enforce preventive behaviours (mask wearing, distancing) among South Africans. Create public awareness of health systems' burden. Build social buy-in of the public to value the contributions of health professionals/ front-line workers e.g. "We stay here for you, please stay home for us" campaigns and "Clap for our Carers" hour.
		• Strategic allocation of procedures for health professionals with underlying health conditions, to minimize their risk.

KEY MESSAGE 8: PPE

What the findings tell us	Logic for change from data to action	Health Systems Improvement Strategy (Individual, professional, system)
• Overall over two thirds of participants expressed the need for all forms of PPE • The data suggests incorrect knowledge of the use of PPE in some clinical situations, e.g. N95 mask for use in triaging patients, use of surgical mask in critical and intensive care of COVID-19 patients • 4 in 5 health professionals expressed the need for environmental controls, eye shields/goggles, gloves and N95 masks • Overall confidence in the use of PPE was low. • 1 in 2 health professionals were confident in their personal ability in the correct use of PPE including donning and doffing • Health professionals indicated their lack of confidence in the availability and accessibility of PPE • Self perceived risk of contracting COVID-19 was high when confidence in the correct use of PPE was low	• Knowledge about correct and rational PPE use in clinical situations is crucial, this is not only for best practice but also to ensure sustained PPE stock in a long-term pandemic • There needs to be recognition that PPE is only one aspect of Infection and Prevention Control Measures (IPC), with other aspects such as environmental control measures often overlooked and ignored in the face of media sensationalism • The data shows that confidence in ability (i.e. to control an individual factor, like donning PPE) is higher than confidence in system/infrastructure factors (system factors out of individual control) i.e. supply chain for provision of PPE as well as environmental controls i.e. ventilation	• Comprehensive training and application of correct use of PPE, including doffing and donning. • Adequate provision of all required PPE for all levels of staff • Instruction on the correct types of PPE to be used in each COVID-19 management procedure • Communication to the public should include information about PPE for different clinical situations • Visual depictions of PPE should be consistent with what is locally used • Greater emphasis should be put on the broader infection prevention and control including environmental measures

KEY MESSAGE 9: HEALTH AND WELLBEING

What the findings tell us	Logic for change from data to action	Health Systems Improvement Strategy (Individual, professional, system)
• The level of concern for health and wellbeing was significantly different by profession • Nearly half of nurse practitioners were extremely concerned about family members and personal health. • 2 in 5 health professionals have extreme concern for their family wellbeing, whilst 1 in 5 health professionals have extreme concern for their own personal wellbeing • 3 in 5 nurse practitioners were concerned about passing infection to family members. • A quarter of nurse practitioners experienced severe psychological distress with health professionals working in the public sector experiencing higher psychological distress than those working in the private sector • Nurses reported the lowest general health and well-being compared to medical practitioners and other health care professionals • Health professionals who reported high psychological distress reported low levels of general health and well-being whilst health professionals who reported high general well-being reported low levels of psychological distress.	• More nurse practitioners reported serious concerns about passing on the infection to family members and about family wellbeing. • Nurse practitioners also had higher personal risk perception. • Poor mental health affects health workforce capabilities and staff performance and morale.	• The health systems improvement strategy is to protect health professionals in their work and work environments by: • During outbreaks such as COVID-19 a pro-active health and wellbeing framework for supporting health professionals should be implemented. The framework should contain a core curriculum which can be adjusted to the specific requirements of the outbreak • The framework needs to be tailored and targeted for all levels of health professionals, i.e. from primary healthcare workers to ICU nurses, doctors etc. • A mechanism for acute situational counselling and debriefing sessions, coping strategies for all levels of health professionals should be implemented by a multi-disciplinary support team • Particular attention should be paid to the shielding of those health professionals with underlying health conditions and / or family members who have COVID-19 risk factors

THANK YOU

- Thanks are due not only to HSRC and UKZN staff, but also to key partners in implementing the survey

- Thank you to influencers and media personalities for encouraging participation of the survey and recording public health messaging

- Thank you to the Department of Science and Innovation and the Department of Health for support and strategic direction