









# Cross-cultural adaptation of Dimensions of Corporate Well-Being Scorecard to the Brazilian Portuguese language

Adaptação transcultural para o português do Brasil do *Dimensions of Corporate Well-Being Scorecard*

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**ABSTRACT | Background:** The integration of occupational risk management initiatives and health promotion and well-being in the workplace poses a challenge to organizations from different sectors. **Objective:** Cross-cultural adaptation of the *Dimensions of Corporate Well-Being Scorecard* (DCWS) to the Brazilian Portuguese language. **Method:** The process of cross-cultural adaptation of the *Dimensions of Corporate Well-Being Scorecard* to the Brazilian Portuguese language evolved along six steps: translation, reconciliation, back-translation, revision by internal expert committee, revision by expert panel (pretest) and final revision. **Results:** The stringent protocols adopted in the present study resulted in a satisfactory and adequate instrument to analyze programs which target workers' health, safety and well-being at organizations operating in Brazil. **Conclusion:** The Brazilian version of DCWS, entitled *Questionário sobre as Dimensões do Bem-Estar Corporativo* (QDBC) represents an advance in the evaluation of the effectiveness of integrated actions for health promotion and workers' well-being in different work environments.

**Keywords |** translation; occupational health; safety; health promotion; surveys and questionnaires.

**RESUMO | Introdução:** A integração de ações de gerenciamento de riscos ocupacionais e medidas para a promoção da saúde e do bem-estar no local de trabalho representa um desafio crescente para organizações de diversos setores produtivos. **Objetivo:** Adaptar transculturalmente o instrumento intitulado *Dimensions of Corporate Well-Being Scorecard* (DCWS) para o contexto brasileiro. **Método:** O processo de adaptação transcultural para o português do Brasil do instrumento DCWS foi estruturado em seis etapas distintas: tradução, reconciliação das traduções, retrotradução do instrumento para o idioma de origem, revisão da versão em português pela Equipe Interna de Especialistas, pré-teste do instrumento por meio de sua aplicação a um Comitê de Experts e revisão final dele. **Resultados:** O rigor metodológico produziu um instrumento satisfatório e adequado para investigar programas com foco na saúde, na segurança e no bem-estar dos trabalhadores de organizações no território nacional. **Conclusão:** A versão do DCWS em português do Brasil, agora intitulado *Questionário sobre as Dimensões do Bem-Estar Corporativo* (QDBC), avança na avaliação da efetividade na integração de ações com foco na promoção da saúde e do bem-estar dos trabalhadores em diferentes contextos de trabalho.

**Palavras-chave |** tradução; saúde do trabalhador; segurança; promoção da saúde; inquéritos e questionários.

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## INTRODUCTION

The concern with occupational health is increasing among organizations from several sectors<sup>1</sup>. Such organizations have acknowledged the impacts of work environments and conditions on the health and well-being of workers, which sometimes contribute to the development of physical and mental disorders, with consequent impairment of the productivity of organizations<sup>2-4</sup>.

To eliminate or control hazards in organizational environments, institutions seek to develop and implement actions to improve health and safety at work and promote the well-being of workers.

However, to accomplish consistent results, such actions should replace dispersed and fragmented measures merely aiming at attenuating negative effects by articulated policies, programs and practices which integrate the elimination or control of existing occupational hazards with measures aiming at promoting health in the workplace and the well-being of workers<sup>5</sup>.

To contribute to such integration, national and international centers are developing instruments to help organizations assess their own programs, as well as their degree of success in the integration of measures previously implemented separately into a broad-scoped program focusing on the health, safety and well-being of workers<sup>6,7</sup>.

Within this context, the Harvard T.H. Chan School of Public Health Center for Work, Health and Well-being has an active role in the development of instruments to support the implementation of approaches aiming at reducing or eliminating occupational hazards and promoting health in the workplace in an integrated manner.

With the support of HealthPartners, the aforementioned school developed a set of three instruments to evaluate several variables related to workers' health, safety, and well-being in an integrated manner. These instruments were grouped in a document entitled the Dimensions of Corporate Integration (DCI) measurement tool.<sup>8</sup>

To make it available to Brazilian organizations, healthcare professionals and in particular to occupational physicians involved in integrated management of health and safety at work, the National Association of Occupational Medicine (Associação Nacional de Medicina do Trabalho—ANAMT) performed the translation and cross-cultural adaptation of the instruments contained in DCI, to wit: *Dimensions of*

*Corporate Safety Scorecard* (DCSS), *Dimensions of Corporate Well-Being Scorecard* (DCWS) and *Indicators of Integration Scorecard* (in progress).

DCSS is already available for use in Brazil, where it is known as *Questionário sobre as Dimensões de Segurança Corporativa* (QDSC)<sup>7</sup>.

The translation and cross-cultural adaptation of DCWS were concluded recently, and represent the focus of the present article, which describes the process undertaken by the group of investigators responsible for the project to make a version adapted to the Brazilian context available.

DCWS comprises five sections entitled “Organizational culture and leadership,” “Program design,” “Program implementation and resources,” “Program evaluation,” and “Scoring summary”. Items are scored on a Likert scale which ranges from “Does not apply at all” (0) to “Fully applies” (5); the total score ranges from 0 to 100.

The first four sections were developed based on the document entitled *The Essential Elements of Effective Workplace Programs and Policies for Improving Worker Health and Well-being*, formulated by the National Institute for Occupational Safety and Health (NIOSH) which concepts were adapted for use in an assessment instrument<sup>8</sup>.

DCWS was intentionally validated with a sample of employees of small and medium-sized enterprises, together with two other instruments developed by the Harvard T.H. Chan School of Public Health Center for Work, Health and Well-being. The internal consistency ( $\alpha=0.94$ ) and item–total correlation (0.17–0.19) obtained for construct validation were adequate. Other studies were performed with construction and health workers in the attempt to better understand the behavior of the analyzed instrument in different occupational contexts<sup>5,6,9,10</sup>.

## METHOD

The process of cross-cultural adaptation of DCWS to the Brazilian Portuguese language was organized in six steps according to international recommendations for cross-cultural adaptation of instruments, to wit: translation, reconciliation of translations, back-translation to the original language, revision of the Portuguese version by an internal expert committee, pretest involving application to an expert panel, and final revision<sup>11-13</sup>.

First ANAMT entered in a partnership with Harvard T.H. Chan School of Public Health and Well-being, and obtained formal authorization to start the translation and adaptation of the original instrument<sup>11</sup>.

Next, two translators independently translated DCWS to the Brazilian Portuguese language. Both translators were native Portuguese speakers, and were given orientation on the aims of the present study to perform a conceptual translation and ensure semantic, idiomatic, experiential and conceptual equivalence. The result of this step was DCWS Portuguese versions 01 and 02.

These versions were analyzed by the project scientific coordinator for the purpose of reconciling them into one single version and remove possible bias. This step resulted in a third Portuguese version of DCWS<sup>14</sup>.

This third version was delivered to two bilingual translators, who independently performed back-translation into the original language. Both translators were fluent in English (a Scottish nurse with experience in mental health, and a Brazilian psychologist with proven English proficiency), did not participate in the earlier steps of the study, and were oriented to perform a literal translation of the version received<sup>13</sup>.

The aim of this step was to ensure high quality to the adapted version, as it allowed identifying inconsistencies in the earlier translations from the original into the Brazilian Portuguese language, resulting in ambiguity and problems in the understanding of idioms uncommon in definite contexts.

Next the two back-translations and the Portuguese versions 01, 02, and 03 were delivered to an internal expert committee specifically called for the present project. This panel comprised five professionals in psychology, social work and management from Laboratory of Mental Health and Quality of Work Life (Laboratório de Saúde Mental e Qualidade de Vida no Trabalho—LSMQVT), Dom Bosco Catholic University (Universidade Católica Dom Bosco—UCDB) with large experience in occupational health psychology, occupational health, and instrument validation.

Together with the professionals who performed back-translation, this committee analyzed the compatibility of versions with the original instrument. They also suggested adjustments in the Portuguese version whenever needed to ensure the equivalence and adequacy of statements as a function of the intended responders. This step resulted in a fourth Portuguese version of DCWS.

This version was assessed through application (pretest) to an expert panel composed of 20 professionals from different fields related to workers' health, safety, and well-being, to wit: labor appellate judges, lawyers, managers, psychologists, occupational nurses, social workers, human resources managers, occupational physicians and psychiatrists, and university nursing and psychology professors. The study scientific coordinator oriented the panel members as to the study aims and methods. The participants were informed about the procedure for the pretest, and were instructed to identify the items and statements with problems in their formulation, were difficult to understand, or somehow disagreed with the legislation in force in Brazil.

The recommendations made by the expert panel were communicated to the internal expert committee for analysis and, when accepted, to be included in the instrument. Inclusion of suggestions rated valid allowed adjusting statements difficult to understand or with problems in their formulation without any change in their meaning.

A final revision, including typographic and grammatical aspects, was performed by the group of investigators responsible for the study. The aim here was to rule out any flaw in the final Portuguese version of DCWS. This step resulted in the fifth version of DCWS, now renamed *Questionário sobre as Dimensões do Bem-Estar Corporativo* (QDBC) — to wit, the adapted version semantically adequate for application in Brazil.

## RESULTS

### DEVELOPMENT OF THE VERSION FOR ADMINISTRATION TO THE EXPERT PANEL

To ensure the semantic, idiomatic, empirical and conceptual equivalence of the Brazilian version of DCWS<sup>15</sup>, the investigators responsible for this project performed a systematic process of translation and cross-cultural adaptation in compliance with international standards<sup>11-13</sup>.

The two first Portuguese versions were obtained through independent translation of the original instruments by two translators. But for some small differences in the translation of some terms, these two versions were considered similar in regard to the structure of statements.

The differences found in the translation of some terms between these two versions (for instance, "effective programs"

was translated as “programas efetivos” and “programas eficazes”; “encourage” as “encorajam” and “incentivam”; “commitment” as “compromisso” and “comprometimento,” among others) did not change the meaning of the statements included in the original instrument.

To develop the synthetic version to be applied to the expert panel, the project scientific coordinator reconciled the two translations into a single one. We cannot say that the characteristics of this synthesized version derived from any of the two translations given the similarity between both. Whenever divergences were found, the criterion for selection was the adequacy of terms to the language spoken by the targeted population of responders. The result of this step was a third Portuguese version of DCWS.

To ensure high quality to the process of translation and cross-cultural adaptation, the internal expert committee analyzed the two back-translations having the third Portuguese version as basis, and compared them to the original instrument. Inconsistencies were found, for which reason some items were revised to ensure equivalence between the original and translated versions.

For instance, section 1—entitled in the original “1. Organizational culture and leadership”—was reconciled as “Cultura e Liderança Organizacional.” Following the revision by the internal expert committee, it was changed to “Cultura Organizacional e Liderança.”

Relative to item “1.2 Demonstrate leadership,” the explanatory section “In some notable examples, corporate Boards of Directors have recognized the value of workforce health and well-being” was reconciled as “Em alguns exemplos emblemáticos, os Conselhos Administrativos Corporativos reconheceram o valor da saúde e bem-estar da força de trabalho.” This section was rewritten by the internal expert committee as “Em alguns exemplos notórios, os Conselhos de Administração Corporativos reconheceram o valor da saúde e bem-estar da força de trabalho.”

For item “2.2. Integrate relevant systems,” changes were made to the translation of section “Integrate separately managed programs into a comprehensive health-focused system and coordinate them with an overall health and safety management system.” In the reconciled version this section was translated as “Devem-se integrar e coordenar separadamente os programas gerenciados em um sistema abrangente centrado na saúde com um sistema geral de gerenciamento de saúde e segurança.” Following the internal

expert committee revision, the version applied to the expert panel read “Deve-se integrar os programas, gerenciados separadamente, em um amplo sistema centrado na saúde e coordená-los com um sistema geral de gerenciamento de saúde e segurança.”

Similar changes were made in sections “3. Program design,” “4. Program implementation and resources,” and “5. Program Evaluation” to ensure not only equivalence between versions, but also to make items easier to understand by rewriting statements rated by the internal expert committee as difficult to understand.

The revision performed by the internal expert committee resulted in the fourth Portuguese version of DCWS. The equivalence of this to the original version is shown in Table 1, which summarizes the steps of the process of translation and cross-cultural adaptation of DCWS until the version administered to the expert panel was obtained.

## ADMINISTRATION TO THE EXPERT PANEL

The adequacy of DCWS fourth Portuguese version to the target population was assessed by administering the instrument to an expert panel (pretest) composed of 20 professionals in the following fields: human resource assistants (15%), organizational and occupational health psychologists (15%), university nursing and psychology professors (10%), social workers (10%), company directors (5%), human development coordinators (5%), human resource analysts (5%), personnel department assistants (5%), management supervisors (5%), lawyers (5%), occupational nurses (5%), physical therapists (5%), labor appellate judges (5%), and occupational physicians and psychiatrists (5%).

The panel members represented institutions from the following sectors: education (50%), management and complementary services (15%), human health and social work (15%), professional activities, public administration, defense and social security (10%), professional, scientific and technical activities (5%), and other services (5%).

Most experts were female (65%), white (90%), and had attended graduate education (80%). About 90% of the experts had full-time jobs at for-profit (45%) and large (70%) organizations.

The experts required about 35 minutes to respond and evaluate the Portuguese version of DCWS. Once all the participants had finished making suggestions, the project scientific coordinator led the analysis of all 20 items in the

**Table 1.** Original version and following adjustments by the internal expert committee of instrument Dimensions of Corporate Well-Being Scorecard, Campo Grande, 2017.

	Original version	Internal expert panel version (4 <sup>th</sup> Portuguese version)
1. Organizational culture and leadership	1.1. Develop a "Human Centered Culture" Effective programs thrive in organizations with policies and programs that promote respect throughout the organization and encourage active worker participation, input, and involvement. A Human Centered Culture is built on trust, not fear.	Desenvolve uma "Cultura Centrada no Ser Humano" Programas efetivos prosperam em organizações com políticas e programas que promovam o respeito em toda a organização e incentivam a participação ativa, a colaboração e o envolvimento dos trabalhadores. Uma Cultura Centrada no Ser Humano se baseia na confiança, não no medo.
	1.2. Demonstrate leadership Commitment to worker health and safety, reflected in words and actions, is critical. The connection of workforce health and safety to the core products, services and values of the company should be acknowledged by leaders and communicated widely. In some notable examples, corporate Boards of Directors have recognized the value of workforce health and well-being by incorporating it into an organization's business plan and making it a key operating principle for which organization leaders are held accountable.	Demonstra liderança O comprometimento com a saúde e a segurança dos trabalhadores, refletido em palavras e ações, é fundamental. A conexão da saúde e segurança da força de trabalho com os principais produtos, serviços e valores da empresa deve ser reconhecida pelos líderes e comunicada amplamente. Em alguns exemplos notórios, os Conselhos de Administração Corporativos reconheceram o valor da saúde e bem-estar da força de trabalho, incorporando-os ao plano de negócios da organização e fazendo dele um princípio operacional chave, pelo qual os líderes da organização são responsáveis.
	1.3. Engage midlevel management Supervisors and managers at all levels should be involved in promoting health-supportive programs. They are the direct links between the workers and upper management and will determine if the program succeeds or fails. Mid level supervisors are the key to integrating, motivating and communicating with employees.	Engajamento da gestão de nível médio Supervisores e gestores em todos os níveis devem estar envolvidos na promoção de programas de apoio à saúde. Eles são a ligação direta entre os trabalhadores e a alta gerência e determinarão se o programa será bem-sucedido ou não. Os supervisores de nível médio são a chave para integrar, motivar e se comunicar com os trabalhadores.
2. Program design	2.1. Establish clear principles Effective programs have clear principles to focus priorities, guide program design, and direct resource allocation. Prevention of disease and injury supports worker health and well-being.	Princípios claramente estabelecidos Programas efetivos têm princípios claros para focar prioridades, guiar a elaboração dos mesmos e direcionar a alocação de recursos. A prevenção de doenças e acidentes dá suporte à saúde e ao bem-estar dos trabalhadores.
	2.2. Integrate relevant systems Program design involves an initial inventory and evaluation of existing programs and policies relevant to health and well-being and a determination of their potential connections. In general, better integrated systems perform more effectively. Programs should reflect a comprehensive view of health: behavioral health/mental health/physical health are all part of total health. No single vendor or provider offers programs that fully address all of these dimensions of health. Integrate separately managed programs into a comprehensive health-focused system and coordinate them with an overall health and safety management system. Integration of diverse data systems can be particularly important and challenging.	Integração de sistemas relevantes A elaboração do programa envolve um inventário inicial e uma avaliação dos programas e políticas existentes que sejam relevantes para a saúde e bem-estar, assim como a determinação de suas potenciais conexões. Em geral, os sistemas melhor integrados funcionam mais efetivamente. Os programas devem refletir uma visão abrangente da saúde: saúde comportamental/saúde mental/saúde física são todas partes da saúde geral. Nenhum vendedor ou fornecedor oferece programas que abordam completamente todas essas dimensões da saúde. Deve-se integrar os programas, gerenciados separadamente, em um amplo sistema centrado na saúde e coordená-los com um sistema geral de gerenciamento de saúde e segurança. A integração de diversos sistemas de dados pode ser particularmente importante e desafiadora.

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**Table 1.** Continuation.

	Original version		Internal expert panel version (4 <sup>th</sup> Portuguese version)
2. Program Design	2.3. Eliminate recognized occupational hazards	Changes in the work environment (such as reduction in toxic exposures or improvement in work station design and flexibility) benefit all workers. Eliminating recognized hazards in the workplace is foundational to WorkLife principles.	Eliminação de riscos ocupacionais reconhecidos  Mudanças no ambiente de trabalho (tais como a redução das exposições tóxicas ou a melhoria no desenho e flexibilidade da estação de trabalho) beneficiam todos os trabalhadores. Eliminar riscos reconhecidos no local de trabalho é fundamental para os princípios da Vida no Trabalho.
	2.4. Be consistent	Workers' willingness to engage in worksite health-directed programs may depend on perceptions of whether the work environment is truly health supportive. Individual interventions can be linked to specific work experience. Change the physical and organizational work environment to align with health goals. For example, blue collar workers who smoke are more likely to quit and stay quit after a worksite tobacco cessation program if workplace dusts, fumes, and vapors are controlled, and workplace smoking policies are in place.	Ser consistente  A vontade dos trabalhadores para se engajarem nos programas voltados para saúde no local de trabalho pode depender da percepção de que o ambiente de trabalho seja verdadeiramente de apoio à saúde. As intervenções individuais podem estar associadas a uma experiência de trabalho específica. Modifique o ambiente de trabalho físico e organizacional para alinhá-lo aos objetivos de saúde. Por exemplo, operários que passaram por um programa antitabagismo no local de trabalho são mais propensos a abandonar o vício e permanecer em abstinência, se as fuligens, fumaças e vapores forem controlados e existirem políticas de uso de cigarro no local de trabalho.
	2.5. Promote employee participation	Ensure that employees are not just recipients of services but are engaged actively to identify relevant health and safety issues and contribute to program design and implementation. Barriers are often best overcome through involving the participants in coming up with solutions. Participation in the development, implementation, and evaluation of programs is usually the most effective strategy for changing culture, behavior, and systems.	Promover a participação dos trabalhadores  Certifique-se que os trabalhadores não sejam apenas receptores de serviços, mas que estejam ativamente engajados em identificar questões relevantes para a saúde e segurança e contribuir com a elaboração e implantação do programa. As barreiras são frequentemente melhor superadas ao envolver os participantes na obtenção de soluções. A participação no desenvolvimento, implantação e avaliação dos programas geralmente são as estratégias mais efetivas para mudar a cultura, o comportamento e os sistemas.
	2.6. Tailor programs to the specific workplace and the diverse needs of workers	Workplaces vary in size, sector, product, design, location, health and safety experience, resources, and worker characteristics such as age, training, physical and mental abilities, resiliency, education, cultural background, and health practices. Successful programs recognize this diversity and are designed to meet the needs of both individuals and the enterprise. Effective programs are responsive and attractive to a diverse workforce. One size does not fit all-flexibility is necessary.	Adaptar os programas ao local de trabalho específico e às diversas necessidades dos trabalhadores  Os ambientes de trabalho variam em tamanho, setor, produto, projeto, localização, experiência em saúde e segurança, recursos e características do trabalhador, tais como: idade, treinamento, habilidades física e mental, resiliência, educação, conhecimentos culturais e práticas de saúde. Os programas bem sucedidos reconhecem essa diversidade e são elaborados para atender as necessidades tanto dos indivíduos, como da empresa. Os programas eficazes são sensíveis e atraídos a uma força de trabalho diversificada. Um modelo não serve a todos - flexibilidade é necessária.

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**Table 1.** Continuation.

	Original version		Internal expert panel version (4 <sup>th</sup> Portuguese version)	
2. Program Design	2.7. Consider incentives and rewards	Incentives and rewards, such as financial rewards, time off, and recognition, for individual program participation may encourage engagement, although poorly designed incentives may create a sense of “winners” and “losers” and have unintended adverse consequences. Vendors’ contracts should have incentives and rewards aligned with accomplishment of program objectives.	Considerar incentivos e recompensas	Incentivos e recompensas, tais como: compensações financeiras, dispensas e reconhecimento, para a participação individual no programa podem encorajar o engajamento, embora incentivos mal elaborados possam criar uma sensação de “ganhadores” e “perdedores” e terem consequências adversas imprevisíveis. Os contratos de fornecedores devem conter incentivos e recompensas alinhados ao cumprimento dos objetivos do programa.
	2.8. Find and use the right tools	Measure risk from the work environment and baseline health in order to track progress. For example, a Health Risk Appraisal instrument that assesses both individual and work-environment health risk factors can help establish baseline workforce health information, direct environmental and individual interventions, and measure progress over time. Optimal assessment of a program’s effectiveness is achieved through the use of relevant, validated measurement instruments.	Encontrar e utilizar as ferramentas corretas	Avalie os riscos do ambiente de trabalho e identifique o estado de saúde inicial do mesmo para monitorar o progresso. Por exemplo, um instrumento de Avaliação de Fatores de Risco à Saúde, tanto para o indivíduo quanto para o ambiente de trabalho, pode ajudar a fornecer informações sobre o estado atual de saúde da força de trabalho, direcionando intervenções ambientais e individuais e mensurando o progresso ao longo do tempo. Uma avaliação ótima da eficácia de um programa é alcançada por meio do uso de instrumentos de medida validados e relevantes.
	2.9. Adjust the program as needed	Successful programs reflect an understanding that the interrelationships between work and health are complex. New workplace programs and policies modify complex systems. Uncertainty is inevitable; consequences of change may be unforeseen. Interventions in one part of a complex system are likely to have predictable and unpredictable effects elsewhere. Programs must be evaluated to detect unanticipated effects and adjusted based on analysis of experience.	Ajustar o programa quando necessário	Programas bem sucedidos refletem o entendimento de que as inter-relações entre trabalho e saúde são complexas. Novos programas e políticas no local de trabalho modificam sistemas complexos. A incerteza é inevitável; as consequências da mudança podem ser imprevisíveis. As intervenções em uma parte de um sistema complexo provavelmente terão efeitos previsíveis e imprevisíveis em outras partes. Os programas devem ser avaliados para detectar efeitos inesperados e ajustá-los com base na análise da experiência.
	2.10. Make sure the program lasts	Design programs with a long-term outlook to assure sustainability. Short-term approaches have short-term value. Programs aligned with the core product/values of the enterprise endure. There should be sufficient flexibility to assure responsiveness to changing workforce and market conditions.	Certificar-se sobre a duração do programa	Elabore programas com perspectiva de longo prazo para assegurar sua sustentabilidade. As abordagens de curto prazo têm valor de curto prazo. Programas alinhados com os principais produtos/valores da empresa perduram. Deve haver flexibilidade suficiente para assegurar sensibilidade à mudança da força de trabalho e das condições de mercado.
	2.11. Ensure confidentiality	Be sure that the program meets regulatory requirements (e.g., HIPAA, State Law, ADA) and that the communication to employees is clear on this issue. If workers believe their information is not kept confidential, the program is less likely to succeed.	Garantir a confidencialidade	Certifique-se que o programa atenda aos requisitos legais (Código de Ética Médica) e que a comunicação com os trabalhadores seja clara nesse aspecto. Se os trabalhadores acreditam que suas informações não são confidenciais, o programa tem menos chances de sucesso.

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**Table 1.** Continuation.

	Original version	Internal expert panel version (4 <sup>th</sup> Portuguese version)	
3. Program implementation and resources	3.1. Be willing to start small and scale up	<p>Although the overall program design should be comprehensive, starting with modest targets is often beneficial if they are recognized as first steps in a broader program. For example, target reduction in injury rates or absence. Consider phased implementation of these elements if adoption at one time is not feasible. Use (and evaluate) pilot efforts before scaling up. Be willing to abandon pilot projects that fail.</p>	<p>Embora a elaboração geral do programa deva ser abrangente, começar com objetivos modestos é, muitas vezes, benéfico, se eles são reconhecidos como passos iniciais de um programa mais amplo. Por exemplo a meta de redução das taxas de acidentes ou de absenteísmo. Considere uma implementação gradual desses elementos se a adoção simultânea não for viável. Utilize (e avalie) os resultados dos projetos piloto antes de avançar e esteja disposto a abandoná-los caso fracassem.</p>
	3.2. Provide adequate resources	<p>Identify and engage appropriately trained and motivated staff. If you use vendors, make sure they are qualified. Take advantage of credible local and national resources from voluntary and government agencies. Allocate sufficient resources, including staff, space, and time, to achieve the results you seek. Direct and focus resources strategically, reflecting the principles embodied in program design and implementation.</p>	<p>Identifique e envolva pessoal devidamente treinado e motivado. Se utilizar fornecedores, certifique-se de que são qualificados. Aproveite recursos locais e nacionais confiáveis de agências governamentais ou não. Aloque recursos suficientes, incluindo pessoal, espaço e tempo para atingir os resultados que você busca. Direcione e concentre estrategicamente os recursos, refletindo os princípios incorporados na elaboração e implantação do programa.</p>
	3.3. Communicate strategically	<p>Effective communication is essential for success. Everyone (workers, their families, supervisors, etc.) with a stake in worker health should know what you are doing and why. The messages and means of delivery should be tailored and targeted to the group or individual and consistently reflect the values and direction of the programs. Communicate early and often, but also have a long-term communication strategy. Provide periodic updates to the organizational leadership and workforce. Maintain program visibility at the highest level of the organization through data-driven reports that allow for a linkage to program resource allocations.</p>	<p>A comunicação efetiva é essencial para o sucesso. Todos (trabalhadores, suas famílias, supervisores etc.) com alguma participação na saúde do trabalhador devem saber o que você está fazendo e o motivo. As mensagens e meios de transmissão devem ser adaptados e direcionados ao grupo, ou ao indivíduo, e refletir consistentemente os valores e a direção dos programas. Comunique-se precoce e frequentemente, mas tenha também uma estratégia de comunicação de longo prazo. Disponibilize atualizações periódicas à liderança organizacional e à força de trabalho. Mantenha a visibilidade do programa no mais alto nível da organização, por meio de relatórios com dados que permitam uma conexão com o programa de alocação de recursos.</p>
	3.4. Build accountability	<p>Build accountability into program implementation. Accountability reflects leadership commitment to improved programs and outcomes and should cascade through an organization starting at the highest levels of leadership. Reward success.</p>	<p>Construa responsabilidade na implantação do programa. A responsabilidade reflete o compromisso da liderança para a melhoria dos programas e resultados e deve ter efeito cascata por meio dos mais altos níveis de liderança. Recompense o sucesso.</p>

Continue...



**Table 1.** Continuation.

	Original version	Internal expert panel version (4 <sup>th</sup> Portuguese version)
4. Program evaluation	4.1. Measure and analyze  Develop objectives and a selective menu of relevant measurements, recognizing that the total value of a program, particularly one designed to abate chronic diseases, may not be determinable in the short run. Integrate data systems across programs and among vendors. Integrated systems simplify the evaluation system and enable both tracking of results and continual program improvement.	Avaliar e analisar  Desenvolva objetivos e um rol seletivo de medidas relevantes, reconhecendo que o valor geral de um programa, particularmente aquele elaborado para reduzir doenças crônicas, pode não ser determinável em curto prazo. Integre os sistemas de dados entre os programas e entre os fornecedores. Sistemas integrados simplificam o sistema de avaliação e permitem o acompanhamento de resultados e a melhoria contínua do programa.
	4.2. Learn from experience  Adjust or modify programs based on established milestones and on results you have measured and analyzed.	Aprender com a experiência  Ajuste ou modifique programas baseando-se em marcos estabelecidos e em resultados que você avaliou e analisou.

instrument, and asked the panel members to report any problem found in their structure, or any flaw likely to impair an adequate understanding of the items.

Many panel members (65%) reported difficulty to understand how to respond the instrument in general. In their view, the statements seemed to correspond to recommendations to organizations of practices likely to improve the well-being of workers, and it was not clear to them what respondents should assess.

The main issue was whether respondents ought to opine on the existence of such good, often ideal practices, or on the availability of initiatives or programs compatible with the items described in column “Essential element.”

The study scientific coordinator explained that assessment concerned the items described in column “Essential element.” She also observed that the difficulties in understanding could be related to how the original instrument was formulated, to wit, based on an adaptation of NIOSH document *The Essential Elements of Effective Workplace Programs and Policies for Improving Worker Health and Well-being*<sup>8</sup>.

To facilitate the understanding of items, the expert panel suggested rewriting the headings of the four first sections and 20 items in a way to make what should be effectively assessed clear.

As a result, in the fifth Portuguese version of DCWS sections “1. Organizational culture and leadership,” “2. Program design,” “3. Program Implementation,” and “4. Program Evaluation” were translated and culturally adapted as: “1. Quanto à Cultura Organizacional e Liderança”

(As to the organizational culture and leadership), “2. Quanto à Elaboração do Programa” (As to program design), “3. Quanto à Implementação do Programa e aos Recursos” (As to program implementation and resources), and “4. Quanto à Avaliação do Programa” (As to program evaluation).

The changes suggested by the expert panel to adequate the descriptions of items in section “1. Organizational culture and leadership” are described in Table 2. The changes made to section “2. Program design” are listed in Table 3. Table 4 summarizes the changes made to items in section “3. Program Implementation.” Finally, Table 5 shows the adjustments in section “4. Program evaluation” suggested by the expert panel and accepted by the study investigators.

Statement “1. [...] Effective programs thrive in organizations with policies and programs that promote respect throughout the organization and encourage active worker participation, input, and involvement,” initially translated as “1. [...] Programas efetivos prosperam em organizações com políticas e programas que promovem o respeito em toda a organização e incentivam a participação ativa, a colaboração e o envolvimento dos trabalhadores,” was changed to “1. [...] Programas efetivos prosperam em organizações que promovem o respeito, incentivam a participação ativa, a colaboração e o envolvimento dos trabalhadores *em suas políticas e programas*” [our emphasis] (Table 2).

Still in regard to section “Organizational culture and leadership,” term *workforce*, initially translated as “força de trabalho,” was changed to “trabalhadores,” and “*mid-level supervisors*,” from “supervisores de nível médio” to “supervisores

de nível intermediário.” These changes sought to adapt the statements to the way the target population of respondents usually speaks (Table 2).

In section “Program design” (Table 3), statement “Programs should reflect a comprehensive view of health: behavioral health/mental health/physical health are all part of total health. No single vendor or provider offers programs that fully address all of these dimensions of health. Integrate separately managed programs into a comprehensive health-focused system and coordinate them with an overall health and safety management system” was initially translated as “Os programas devem refletir uma visão abrangente da saúde: *saúde comportamental/saúde mental/saúde física são todas partes* da saúde geral. *Nenhum vendedor ou fornecedor oferece programas que abordam completamente todas essas dimensões da saúde. Deve-se integrar os programas, gerenciados separadamente, em um amplo sistema centrado na saúde*

e coordená-los com um sistema geral de gerenciamento de saúde e segurança” [our emphasis].

To facilitate the understanding of this statement, the expert panel suggested some rewriting to simplify it. The final version thus says: “Os programas devem refletir uma visão abrangente da saúde: *saúde comportamental, mental e física são parte* da saúde geral. *Nenhuma oferta de programa aborda completamente todas essas dimensões da saúde. Deve-se integrá-los em um amplo sistema centrado na saúde (não os gerenciando separadamente)* e coordená-los com um sistema geral de gerenciamento de saúde e segurança no trabalho” (our emphasis) (Table 3).

Still in regard to section “Program design” (Table 3) the panel suggested rewriting statement “Design programs with a long-term outlook to assure sustainability.” Initially translated as “*Elabore programas com perspectiva de longo prazo para assegurar sua sustentabilidade*” (our emphasis), in the

**Table 2.** Original version and following contributions by the expert panel of instrument Dimensions of Corporate Well-Being Scorecard, Campo Grande, 2017.

	Original version	Expert panel version (5 <sup>th</sup> Portuguese version)
1. Develop a “Human Centered Culture”	Effective programs thrive in organizations with policies and programs that promote respect throughout the organization and encourage active worker participation, input, and involvement. A Human Centered Culture is built on trust, not fear.	A organização desenvolve uma “Cultura Centrada no Ser Humano”
2. Demonstrate leadership	Commitment to worker health and safety, reflected in words and actions, is critical. The connection of workforce health and safety to the core products, services and values of the company should be acknowledged by leaders and communicated widely. In some notable examples, corporate Boards of Directors have recognized the value of workforce health and well-being by incorporating it into an organization’s business plan and making it a key operating principle for which organization leaders are held accountable.	Ocorre liderança na integração do programa à organização
3. Engage midlevel management	Supervisors and managers at all levels should be involved in promoting health-supportive programs. They are the direct links between the workers and upper management and will determine if the program succeeds or fails. Mid level supervisors are the key to integrating, motivating and communicating with employees.	Existe engajamento da gestão de nível intermediário

**Table 3.** Original version and following contributions by the expert panel of instrument Dimensions of Corporate Well-Being Scorecard, Campo Grande, 2017.

Original version	Expert panel version (5 <sup>th</sup> Portuguese version)
<p>1. Establish clear principles</p> <p>Effective programs have clear principles to focus priorities, guide program design, and direct resource allocation. Prevention of disease and injury supports worker health and well-being.</p>	<p>Os princípios são claramente estabelecidos</p> <p>Programas efetivos têm princípios claros para identificar prioridades, guiar a sua elaboração e direcionar a alocação de recursos. A prevenção de doenças e acidentes dá suporte à saúde e ao bem-estar no trabalho.</p>
<p>2. Integrate relevant systems</p> <p>Program design involves an initial inventory and evaluation of existing programs and policies relevant to health and well-being and a determination of their potential connections. In general, better integrated systems perform more effectively. Programs should reflect a comprehensive view of health: behavioral health/mental health/physical health are all part of total health. No single vendor or provider offers programs that fully address all of these dimensions of health. Integrate separately managed programs into a comprehensive health-focused system and coordinate them with an overall health and safety management system. Integration of diverse data systems can be particularly important and challenging.</p>	<p>Existe integração de sistemas relevantes</p> <p>A elaboração do programa envolve um inventário inicial e uma avaliação dos programas e políticas existentes que sejam relevantes para a saúde e bem-estar, assim como a determinação de suas potenciais conexões. Em geral, os sistemas melhor integrados funcionam mais efetivamente. Os programas devem refletir uma visão abrangente da saúde: saúde comportamental, mental e física são parte da saúde geral. Nenhuma oferta de programa aborda completamente todas essas dimensões da saúde. Deve-se integrá-los em um amplo sistema centrado na saúde (não gerenciando-os separadamente) e coordená-los com um sistema geral de gerenciamento de saúde e segurança no trabalho. A integração de diversos sistemas de dados pode ser particularmente importante e desafiadora.</p>
<p>3. Eliminate recognized occupational hazards</p> <p>Changes in the work environment (such as reduction in toxic exposures or improvement in work station design and flexibility) benefit all workers. Eliminating recognized hazards in the workplace is foundational to WorkLife principles.</p>	<p>Busca-se a eliminação de riscos ocupacionais reconhecidos</p> <p>Mudanças no ambiente de trabalho (tais como a redução das exposições tóxicas ou a melhoria no desenho e flexibilidade da estação de trabalho) beneficiam todos os trabalhadores. Eliminar riscos reconhecidos no local de trabalho é fundamental para os princípios da Vida no Trabalho.</p>
<p>4. Be consistent</p> <p>Workers' willingness to engage in worksite health-directed programs may depend on perceptions of whether the work environment is truly health supportive. Individual interventions can be linked to specific work experience. Change the physical and organizational work environment to align with health goals. For example, blue collar workers who smoke are more likely to quit and stay quit after a worksite tobacco cessation program if workplace dusts, fumes, and vapors are controlled, and workplace smoking policies are in place.</p>	<p>Tem consistência</p> <p>A vontade dos trabalhadores para se engajar nos programas voltados para a saúde no local de trabalho pode depender da percepção de que o ambiente de trabalho seja de apoio à saúde verdadeiramente. As intervenções individuais podem estar associadas a uma experiência de trabalho específica. Modifique o ambiente de trabalho físico e organizacional para alinhá-lo aos objetivos de saúde. Por exemplo, operários que passaram por um programa antitabagismo no local de trabalho são mais propensos a abandonar o vício e permanecer em abstinência, se a fuligem, fumaças e vapores forem controlados e existirem políticas sobre o tabagismo no local de trabalho.</p>
<p>5. Promote employee participation</p> <p>Ensure that employees are not just recipients of services but are engaged actively to identify relevant health and safety issues and contribute to program design and implementation. Barriers are often best overcome through involving the participants in coming up with solutions. Participation in the development, implementation, and evaluation of programs is usually the most effective strategy for changing culture, behavior, and systems.</p>	<p>Promove a participação dos trabalhadores</p> <p>Certifique-se que os trabalhadores não sejam apenas receptores de serviços, mas que estejam ativamente engajados em identificar questões relevantes para a saúde e segurança no trabalho e contribuir com a elaboração e implantação do programa. As barreiras são frequentemente melhor superadas ao envolver os participantes na criação das soluções. A participação no desenvolvimento, implantação e avaliação dos programas geralmente são as estratégias mais efetivas para mudar a cultura, o comportamento e os sistemas.</p>

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**Table 3.** Continuation.

Original version		Expert panel version (5 <sup>th</sup> Portuguese version)	
6. Tailor programs to the specific workplace and the diverse needs of workers	Workplaces vary in size, sector, product, design, location, health and safety experience, resources, and worker characteristics such as age, training, physical and mental abilities, resiliency, education, cultural background, and health practices. Successful programs recognize this diversity and are designed to meet the needs of both individuals and the enterprise. Effective programs are responsive and attractive to a diverse workforce. One size does not fit all-flexibility is necessary.	Adapta os programas ao local de trabalho específico e às diversas necessidades dos trabalhadores	Os ambientes de trabalho variam em tamanho, setor, produto, projeto, localização, experiência em saúde e segurança no trabalho, recursos e características do trabalhador, tais como: idade, treinamento, habilidades física e mental, resiliência, educação, conhecimentos culturais e práticas de saúde. Os programas bem-sucedidos reconhecem essa diversidade e são elaborados para atender às necessidades tanto dos indivíduos, como da empresa. Os programas eficazes são sensíveis e atrativos a uma equipe de trabalhadores diversificada. Um modelo único não serve a todos – flexibilidade é necessária.
7. Consider incentives and rewards	Incentives and rewards, such as financial rewards, time off, and recognition, for individual program participation may encourage engagement, although poorly designed incentives may create a sense of “winners” and “losers” and have unintended adverse consequences. Vendors’ contracts should have incentives and rewards aligned with accomplishment of program objectives.	Considera incentivos e recompensas	Incentivos e recompensas, tais como: compensações financeiras, dispensas e reconhecimento, para a participação individual no programa podem encorajar o engajamento, embora incentivos mal elaborados possam criar uma sensação de “ganhadores” e “perdedores” e terem consequências adversas imprevistas. Os contratos de fornecedores devem conter incentivos e recompensas alinhados ao cumprimento dos objetivos do programa.
8. Find and use the right tools	Measure risk from the work environment and baseline health in order to track progress. For example, a Health Risk Appraisal instrument that assesses both individual and work-environment health risk factors can help establish baseline workforce health information, direct environmental and individual interventions, and measure progress over time. Optimal assessment of a program’s effectiveness is achieved through the use of relevant, validated measurement instruments.	Localiza e utiliza as ferramentas corretas	Avalie os riscos do ambiente de trabalho e identifique o estado de saúde inicial do mesmo para monitorar o progresso. Por exemplo, um instrumento de Avaliação de Fatores de Risco à Saúde, tanto para o indivíduo quanto para o ambiente de trabalho, pode ajudar a fornecer informações sobre o estado atual de saúde dos trabalhadores, direcionando intervenções ambientais e individuais e mensurando o progresso ao longo do tempo. Uma avaliação ótima da eficácia de um programa é alcançada por meio do uso de instrumentos de medida validados e relevantes.
9. Adjust the program as needed	Successful programs reflect an understanding that the interrelationships between work and health are complex. New workplace programs and policies modify complex systems. Uncertainty is inevitable; consequences of change may be unforeseen. Interventions in one part of a complex system are likely to have predictable and unpredictable effects elsewhere. Programs must be evaluated to detect unanticipated effects and adjusted based on analysis of experience.	O programa é ajustado quando necessário	Programas bem-sucedidos refletem o entendimento de que as inter-relações entre trabalho e saúde são complexas. Novos programas e políticas no local de trabalho modificam sistemas complexos. A incerteza é inevitável; as consequências da mudança podem ser imprevisíveis. As intervenções em uma parte de um sistema complexo, provavelmente, terão efeitos previsíveis e imprevisíveis em outras partes. Os programas devem ser avaliados para detectar efeitos inesperados e ajustá-los com base na análise da experiência.
10. Make sure the program lasts	Design programs with a long-term outlook to assure sustainability. Short-term approaches have short-term value. Programs aligned with the core product/values of the enterprise endure. There should be sufficient flexibility to assure responsiveness to changing workforce and market conditions.	O programa tem continuidade	Programas com perspectiva de longo prazo devem ser elaborados para assegurar sua sustentabilidade. As abordagens de curto prazo têm valor de curto prazo. Programas alinhados com os principais produtos e valores da empresa perduram. Deve haver flexibilidade suficiente para assegurar sensibilidade à mudança dos trabalhadores e das condições de mercado.
11. Ensure confidentiality	Be sure that the program meets regulatory requirements (e.g., HIPAA, State Law, ADA) and that the communication to employees is clear on this issue. If workers believe their information is not kept confidential, the program is less likely to succeed.	O programa garante a confidencialidade	Certifique-se que o programa atenda aos requisitos legais (Código de Ética Médica) e que a comunicação com os trabalhadores seja clara nesse aspecto. Se os trabalhadores acreditam que suas informações não são confidenciais, o programa terá menos chances de sucesso.

**Table 4.** Original version and following contributions by the expert panel of instrument Dimensions of Corporate Well-Being Scorecard, Campo Grande, 2017.

	Original version		Expert panel version (5 <sup>th</sup> Portuguese version)
1. Be willing to start small and scale up	Although the overall program design should be comprehensive, starting with modest targets is often beneficial if they are recognized as first steps in a broader program. For example, target reduction in injury rates or absence. Consider phased implementation of these elements if adoption at one time is not feasible. Use (and evaluate) pilot efforts before scaling up. Be willing to abandon pilot projects that fail.	Há disposição para começar aos poucos e ir crescendo	Embora a elaboração geral do programa deva ser abrangente, começar com objetivos modestos é, muitas vezes, benéfico, se eles são reconhecidos como passos iniciais de um programa mais amplo. Por exemplo a meta de redução das taxas de acidentes ou de absenteísmo. Considere uma implementação gradual desses elementos se a adoção simultânea não for viável. Utilize (e avalie) os resultados dos projetos piloto antes de avançar e esteja disposto a abandoná-los caso fracassem.
2. Provide adequate resources	Identify and engage appropriately trained and motivated staff. If you use vendors, make sure they are qualified. Take advantage of credible local and national resources from voluntary and government agencies. Allocate sufficient resources, including staff, space, and time, to achieve the results you seek. Direct and focus resources strategically, reflecting the principles embodied in program design and implementation.	Recursos adequados são disponibilizados	Identifique e envolva pessoal devidamente treinado e motivado. Se utilizar fornecedores, certifique-se de que são qualificados. Aproveite recursos locais e nacionais confiáveis de agências governamentais ou não. Aloque recursos suficientes, incluindo pessoal, espaço e tempo para atingir os resultados que você busca. Direcione e concentre estrategicamente os recursos, refletindo os princípios incorporados na elaboração e implantação do programa.
3. Communicate strategically	Effective communication is essential for success. Everyone (workers, their families, supervisors, etc.) with a stake in worker health should know what you are doing and why. The messages and means of delivery should be tailored and targeted to the group or individual and consistently reflect the values and direction of the programs. Communicate early and often, but also have a long-term communication strategy. Provide periodic updates to the organizational leadership and workforce. Maintain program visibility at the highest level of the organization through data-driven reports that allow for a linkage to program resource allocations.	A comunicação é utilizada de maneira estratégica	A comunicação efetiva é essencial para o sucesso. Todos (trabalhadores, suas famílias, supervisores etc.) com alguma participação na saúde do trabalhador devem saber o que você está fazendo e o motivo. As mensagens e meios de transmissão devem ser adaptados e direcionados ao grupo, ou ao indivíduo, e refletir consistentemente os valores e a direção dos programas. Comunique-se precoce e frequentemente, mas tenha também uma estratégia de comunicação de longo prazo. Disponibilize atualizações periódicas à liderança organizacional e aos trabalhadores. Mantenha a visibilidade do programa para o mais alto nível da organização, por meio de relatórios, com dados que permitam uma conexão com o programa de alocação de recursos.
4. Build accountability	Build accountability into program implementation. Accountability reflects leadership commitment to improved programs and outcomes and should cascade through an organization starting at the highest levels of leadership. Reward success.	Há construção de responsabilidade	Construa responsabilidade na implantação do programa. A responsabilidade reflete o compromisso da liderança na melhoria dos programas e resultados e deve ter efeito cascata por meio dos mais altos níveis de liderança. Recompense o sucesso.

**Table 5.** Original version and following contributions by the expert panel of instrument Dimensions of Corporate Well-Being Scorecard, Campo Grande, 2017.

	Original version		Expert panel version (5 <sup>th</sup> Portuguese version)
1. Measure and analyze	Develop objectives and a selective menu of relevant measurements, recognizing that the total value of a program, particularly one designed to abate chronic diseases, may not be determinable in the short run. Integrate data systems across programs and among vendors. Integrated systems simplify the evaluation system and enable both tracking of results and continual program improvement.	Existe avaliação e análise	Desenvolva objetivos e uma lista de medidas relevantes, reconhecendo que o valor geral de um programa, particularmente aquele elaborado para reduzir doenças crônicas, pode não ser consolidado em curto prazo. Integre os sistemas de dados entre os programas e entre os fornecedores. Sistemas integrados simplificam o processo de avaliação, permitem o acompanhamento de resultados e a melhoria contínua do programa.
2. Learn from experience	Adjust or modify programs based on established milestones and on results you have measured and analyzed.	Aprende-se com a experiência	Ajuste ou modifique programas baseando-se em referências estabelecidas e em resultados que você avaliou e analisou.



final version it says: “*Programas com perspectiva de longo prazo devem ser elaborados para assegurar sua sustentabilidade*” (our emphasis). Once again, the idea was to facilitate the reading and understanding of the instrument without changing the meaning of statements.

Further narrow-scoped changes seeking to standardize the terms used as a function of the target respondents, and update legal aspects to the norms in force in Brazil (as e.g., the Medical Ethics Code) were suggested by the expert panel and included in the instrument. These changes are described in Tables 2, 3, 4, and 5.

Similar procedures were used in the translation and cross-cultural adaptation of the instructions to respond to the instrument and scoring to ensure the semantic, idiomatic, experiential and conceptual equivalence of statements.

Once the process of translation and cross-cultural adaptation was over, the instrument was named QDBC which is the adapted, semantically adequate Brazilian Portuguese version.

## DISCUSSION

Adapting instruments for use in different countries and cultures is a complex task, and demands complying with internationally accepted protocols to ensure the high quality of the work done, achieve equity in assessment, and comparability between the scores obtained with the original and adapted versions<sup>16-18</sup>.

The procedures adopted in the present study (translation, reconciliation, back-translation, revision by internal expert committee, assessment by expert committee, and final revision by the project investigators) were designed to ensure high quality to the final Portuguese version of DCWS, by following internationally acknowledged recommendations for translation and cross-cultural adaptation of instruments.

The steps of translation and reconciliation resulted in the earliest Portuguese version of the instrument of interest. Back-translation detected semantic or conceptual differences likely to impair the equivalence of the Portuguese to the original version. The revision performed by the internal expert committee sought to solve such discrepancies and develop the version to be administered to the expert panel as pretest.

The recommendations made by the expert panel — composed of professionals with large experience in health

and safety in the workplace — allowed adjusting the instrument to the Brazilian reality, without interfering with the semantic, idiomatic, experiential, and conceptual equivalence of the instrument.

A relevant contribution made by the expert panel, which was accepted and included by the internal expert committee and the project investigators, was the suggestion to rewrite the description of the 20 items to be assessed in the first four sections in a way respondents might see what they should consider upon scoring these items.

This procedure made the statements easy to understand by the expert panel without impairing their equivalence to the ones in the original instrument.

The description of items was indeed modified, however, this change was necessary to adapt the Brazilian version of DCWS to how the target respondents do speak. Differently from a mere translation, cross-cultural adaptation often demands changes in the instrument's layout, or adjustments in examples and statements to ensure not only the semantic and idiomatic, but also the experiential and conceptual equivalence of the translated and adapted versions<sup>14</sup>.

The present study contributes to enlarge the set of available validated instruments to assess workers' health, safety and well-being under different working conditions.

The adaptation of DCWS to the Brazilian Portuguese language, together with the translation of DCSS into Portuguese<sup>7</sup>, and the future translation of Indicators of Integration Scorecard will thus make available in Brazil all three instruments composing DCI, developed by Harvard T.H. Chan School of Public Health — Center for Work, Health and Well-being<sup>8</sup>.

This initiative increases the arsenal of instruments available to achieve more accurate diagnoses, and also allows improving existing practices aiming at creating safer and healthier work environments in Brazilian organizations<sup>7,17,19</sup>.

The sampling method used should be considered a limitation of the present study, because it did not allow representing the Brazilian diversity. However, the qualitative and quantitative composition of the expert panel called for pretesting the adapted version complied with recommendations in the literature (number and professional diversity) for expert panels to evaluate the quality of adaptations of instruments<sup>20</sup>.

Although semantic, idiomatic, experiential and conceptual equivalence was ensured, new studies to measure validity

and psychometric properties, following the methods used in the present study for validation of instruments to different cultures and contexts, are needed to guarantee the high quality of the Portuguese version of DCWS<sup>21</sup>.

## CONCLUSIONS

The Brazilian Portuguese version of DCWS obtained in the present study represents a considerable advance in occupational health.

The cross-cultural adaptation of DCWS to the Brazilian context increases the number of instruments available to assess the effectiveness of actions and programs to promote workers' health and well-being in different work contexts.

Quantitative studies are needed to assess the validity and psychometric properties of the translated and cross-cultural adapted instrument vis-à-vis its original version.

Such procedure will afford a better understanding of the performance of QDBC within the Brazilian context, and will enable the creation of benchmark repositories available for consultation by all types of organizations interested

in developing increasingly healthier and more productive work environments.

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## CONFLICT OF INTERESTS

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