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INCLUSIVITY AT THE WORKPLACE: AN INQUIRY ON THE ENVIRONMENT OF A PERSON WITH SPECIAL NEEDS IN A STEM-BASED WORKPLACE

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ABSTRACT

People with special needs can be found increasingly in the workplace in recent years as there is greater acceptance of diversity, and inclusion. This research uses narrative inquiry to understand the factors/ conditions/ environment that promote or inhibit inclusiveness. This also gives an insight into the challenges faced by an individual who is presently in the laboratory-based workforce. Inclusion in the workplace is crucial for organizations that aim at creating a welcoming and supportive environment for all employees. Using in-depth semi-structured interviews, experiences of the subject were explored to gain a better understanding of the person's life and work environment. The individual in this research case study has been living with special needs and is now actively working in a research lab in Singapore. Individual experiences seek to understand how various factors interact and contribute to the work environment. The emphasis will be on understanding contextually how different variables and aspects influence the person's working life. The interview was transcribed and NVivo was used to organize and systematically code into themes or categories. The data was divided into various categories such as background, roles and perceptions of responsibilities, essential skills, support systems to accommodate workers' needs, communication, and job satisfaction.

Keywords: Inclusion, Diversity, Supportive work environment, laboratory-based workforce

INTRODUCTION

In recent years, there has been increasing acceptance of individuals with special needs in the workplace, driven by greater awareness of diversity, equity, and inclusion. The United Nations' 2030 Agenda for Sustainable Development, specifically Disability-Inclusive Goal SDG 8, aims to ensure that PWDs have full access to the job market (Goal 8, n.d.). Similarly, the Enabling Masterplan 2030 in Singapore recommends bolstering inclusive employment opportunities by enhancing support for Persons with Disabilities (PWDs) and developing the capabilities of inclusive employers (Enabling Masterplan 2030, 2024). Inclusion in the workplace is essential for organizations striving to create a welcoming and supportive environment for all employees.

Careers in STEM (science, technology, engineering, and mathematics) span various environments, including research facilities, classrooms, laboratories, and fields (Indeed, 2025). As the demand for skilled professionals in STEM fields rises, it is crucial to harness the untapped potential of individuals with special needs (Ezeafulukwe et al., 2024).

This case study aims to explore the experiences of an individual with disabilities in the workforce in Singapore to understand the conditions that promote or inhibit inclusiveness. It will also provide insights into the challenges faced by individuals currently working in STEM fields. Through in-depth, semi-structured interviews, the research will offer a comprehensive understanding of inclusiveness in the work environment in Singapore. The case study will identify perceived positive and negative conditions in the work environment for individuals with special needs. This understanding will enable organizations to better support PWDs in a comprehensive way, leading to company growth.

This case study explores the career journey, responsibilities, and experiences of an associate researcher, Robin*, working in the skin and personal care department of XYZ company. It provides an account of the associate researcher's career journey including path to employment, roles and responsibilities. The insights are derived from an in-depth interview conducted with Robin, to highlight the strengths and weaknesses focusing on the subject's professional development, communication skills and ability to manage challenges.

From the in-depth analysis of this case study, this paper aims to identify key factors that contribute to the success of PWD professionally and highlight areas that require improvements to identify factors that promote or inhibit inclusiveness in a STEM-based environment in Singapore. By sharing Robin's story, the case study showcases the importance of support systems, professional development and work-life balance in achieving career success and personal well-being on a person with special needs in their workplace. It will provide insights into their work by investigating the elements that encourage or hinder inclusivity, along with the obstacles an individual encounters.

The research questions that this paper answers are: What are considered favourable work conditions for PWDs in a STEM-based environment? What are the challenges faced by individuals in their field of work? What are the factors that inhibit inclusiveness? and how to enhance PWDs contribution that leads to organization growth?

LITERATURE REVIEW

Definitions and Employment Statistics for PWDs

Definitions of disabilities vary widely among countries. In the Singapore's Enabling Masterplan, PWDs are defined as those whose chances of securing, maintaining employment positions, and advancing in education and training, including recreation, as 'equal members of the community' are substantially reduced due to physical, sensory, and intellectual disabilities, as well as autism (SG Enable, n.d.).

According to Singapore government statistics, among resident persons with disabilities in the working ages of 15 to 64 (in 2022 and 2023), on average, 32.7% were employed, 3.6% were without a job and actively looking for one, and the remaining 63.9% were outside the labor force -with most citing poor health or disability as the main reason (SG Enable, n.d.).

The Enabling Masterplans are national roadmaps for the government and the community to work together to support PWDs (SG Enable, n.d.). The Taskforce on Promoting Inclusive Employment Practices was formed to follow up on the goal set out in the Enabling Masterplan 2030 (EMP2030), under the area of Inclusive Employment, to raise the employment rate of resident PWDs to 40% by 2030 (SG Enable, n.d.). The Taskforce investigated ways to increase the number of inclusive employers and expand the range of alternative and supported employment models, in line with recommendations under EMP2030. These efforts would enable more persons with disabilities to enter the workforce and sustain employment (SG Enable, n.d.). The Taskforce proposed a three-pronged approach to boost the employment of PWDs: (a)

Grow and Develop Capabilities of Inclusive Employers, (b) Expand Employment Opportunities for PWDs, and (c) Uplift Capabilities of Job Coaches (SG Enable, n.d.).

Employment Rate for Persons with Disabilities

The employment rate for persons with disabilities aged 15-64 in Singapore rose from 28.2% during 2018-2019 to 30.1% in 2020-2021 (MSF, n.d.). Employment is often a significant aspect of people's lives, contributing to financial independence, self-worth, and confidence. This is particularly significant for persons with disabilities, as participation in work activities whether full-time, part-time, or ad hoc—provides an avenue for them to remain active and integrated within the community, while giving a quiet confirmation of their abilities to be a contributing member of society. Despite these improvements, finding work remains challenging for PWDs, often more so than the actual job itself (Hart, 2022).

Traditionally, PWDs have been employed in sectors such as F&B Services and Retail Trade. Special Education (SPED) schools in Singapore offer vocational tracks in these sectors to prepare students for employment opportunities upon graduation (SG Enable, n.d.). Workplace inclusion goes beyond physical integration; it involves fostering an environment where all employees feel valued and respected. Many organizations incorporate inclusion initiatives into their broader Diversity, Equity, and Inclusion strategies (Nguyen et al., 2024). Research suggests that creating an inclusive workplace requires addressing societal, organizational, employer, and individual factors (Rezai et al., 2023). Barriers to inclusion often stem from organizational practices, while enablers include cultivating a supportive and welcoming culture (Rezai et al., 2023). An inclusive workplace environment not only recognizes but also values the unique contributions and collective efforts of a diverse workforce (Rezai et al., 2023). This evolving process is shaped by external influences and the organization's active commitment to fostering inclusivity (Rezai et al., 2023). By mitigating barriers and reinforcing enablers, organizations can establish an inclusive workplace that benefits all employees, including PWDs.

Employment Support Programs for Persons with Disabilities

In Singapore, the Open-Door Programme (ODP), administered by SG Enable, encourages employers to hire, train, and integrate PWDs into the workplace through grants and employment support services. Under the ODP, PWDs receive transitional support into open employment to help them gain independence in the workforce (MSF, n.d.). PWDs can also tap into the ODP Training Grant, which provides training allowances and enhanced course fee subsidies to attend training courses. These support programs help develop new and existing skillsets, boosting their employability (MSF, n.d.). However, research does state that finding work is hard and, in most cases, harder than the actual job (Hart, 2022).

To provide targeted employment support for PWDs amid the pandemic, SG Enable introduced three new programs under the National Jobs Council: Place-and-Train, Attach-and-Train, and Skills Development Programme. These programs offer customized employment, traineeships, and skills upgrading opportunities (MSF, n.d.). The Government also supports employers of PWDs through the Enabling Employment Credit (EEC), which provides wage offsets of up to 30% for each Singaporean employee with disabilities earning below \$4,000 per month (MSF, n.d.). Employers who expand local hiring may also be eligible for wage support under the Jobs Growth Incentive (JGI). Based on the latest available data, more than 3,400 PWDs were hired between September 2020 and November 2021 with support from the JGI (MSF, n.d.).

Within the Singapore context, there are various programs to support employment for PWDs. This case study explores various benefits and challenges faced by an individual within their workplace environment.

METHODOLOGY

Inclusion in the workplace is essential for organizations striving to create a welcoming and supportive environment for all employees. By capturing these lived experiences, the case study aims to uncover insights into the working conditions of individuals with special needs. One of the ways to capture lived experience is narrative inquiry, which is a qualitative research methodology. It is based on the belief that humans are "storytelling animals" (Bortolussi, 2012). This approach leverages the stories the participants share about their workplace experiences to gain a deeper understanding of their lived realities. This research employs in-depth semi-structured interviews to collect narratives from individuals with special needs who are currently working in Singapore to identify the factors, conditions, and environments that either promote or hinder diversity and inclusiveness in the workplace.

Participant Recruitment and Consent Process

The participant was recruited through referrals from friends. The research team engaged the potential participant via an email and Zoom meeting to explain the research process and invited them to participate in the study. In this case study, Robin was eager to participate and gave their verbal consent over the Zoom meeting. The participant then received recruitment materials outlining the study process and a consent form to sign. They were given a few days to decide whether they wished to participate and inform the researchers of their decision. The research team explained that the study focused on the lived experiences of working adults with special needs. Participants were assured that their identities would remain anonymous in any data shared at conferences or in publications.

The interview lasted approximately over an hour and was audio recorded. The researchers transcribed the interview data and shared the document with the participant within one month of the interview. A thematic analysis was conducted using NVivo to identify and group aspects of the participants' experiences into similar codes and themes as seen in the heading in the results and findings. Interviewing working adults with special needs provided valuable insights into their experiences, challenges, and perspectives. This analysis and reporting ensured that the voices of people with special needs are not only heard but also accurately interpreted to inform decision makers of meaningful action.

RESULTS AND FINDINGS

Background of Case Study

Robin graduated with a diploma in Biotechnology in 2018 and served in the Army for two years. Robin has been working full-time as an associate researcher at XYZ company since August 2021, marking three years and seven months in the role.

On the process of searching for a job, Robin states, "it got to a point where in one month, I can recall, that I have sent out a total of over 120 applications.", and it was during the COVID-19 pandemic "which posed challenges to get a job", but with encouragement from their father, they embarked on a job search, leading to their current role. "My dad gave me a nudge that I would not forget for the rest of my life...he basically told me to start the job-hunting process."

Robin was contacted by the E2C, Employability and Employment Center (E2C, 2025), formed by the Autism Resource Center (ARC) and was informed about the position through a training opportunity offered in April 2021. Robin participated in a traineeship program in the Documentation Department of a biopharmaceutical firm and noted that "The traineeship was not what I expected...it enabled me to work behind the scenes and provided valuable experience in both documentation and mass production of pharmaceutical drugs".

Robin described the decision to join XYZ company as “a gamble,” stating, “during that same day E2C got back to me, with the opportunity with XYZ. And so, it was so-called gamble for me. So, I decided to go and choose XYZ firm.” The subject opted for XYZ over another firm that required a one-year full-time contract with rotating shift work. Robin was initially offered a training contract, and if the person passes the training, then the working contract is offered.

Roles and Perceptions of Responsibilities

Robin’s primary responsibility was to conduct screening tests in the lab for both prototypes and raw materials. These tests determine the efficacy of materials against common pathogens such as bacteria and fungi, contributing to the progress of research projects. In addition to lab tests, Robin mentioned that “I also managed to create flow charts of documents to help me understand certain systems better...it was very well received from my colleagues as well as my superiors.”

In terms of challenges and ease of responsibilities, Robin states that, “There is a mix of both challenges and also being in a level of easy as well...I just keep telling myself to face it. To take it strongly (take it head-on).”. As research states that people with autism possess strengths like exceptional attention to detail and strong analytical skills (Embrace Autism, 2023), it can be leveraged in roles that require precision and focus like Robin’s. As an additional responsibility, Robin was also part of a planning committee “of five people to promote the well-being of our researchers” and organize events. These events, such as year-end gatherings and sharing sessions with research specialists, add value to their work life. Robin’s work responsibilities were welcomed as it was a mix of challenges and ease and added value to their work life. Autistic individuals make a lot of “hard task choices” despite small rewards, and regardless of repetition, they do hard work as their brain “rewards intrinsically” (Embrace Autism, 2023).

Essential Skills

Robin emphasized the importance of skills such as conducting research, managing documentation, and ensuring business continuity for the lab. Their background in biotechnology, obtained from Singapore Polytechnic, and experience during the SG United Traineeships program have equipped them with the necessary skills. Robin highlights, “We need a lot of good skills to perform well in the job, but the most important ones I can share are clear communication, good documentation, attention to detail, and consistency.” Embrace Autism (2023), highlights that autistic people are less likely to make irrational decisions and have a good attention to detail, a high drive to analyze and construct systems, which are helpful to Robin’s roles.

When asked about their strengths, Robin states that active listening and real-time notetaking is one that is valued, especially during meetings. “I decided to go and take it upon myself to test out the meeting notes function in our Microsoft Teams...it enabled me to start creating meeting notes from scratch.” Robin has an additional role at work that has helped them develop connections with representatives from various regions, “It also enabled me to get in contact with the other representatives from the world, such as Newcastle, the Middle East, Japan, and the United Kingdom.” Autistic people’s attention to detail and fixations are qualities that allow autistic people to be considered unique and able to contribute to society (Embrace Autism, 2023).

Accommodation and Support Systems

Robin acknowledges the accommodations and support systems in place at their workplace, which help perform their job effectively such as regular 1-to-1 connect meetings with their supervisor and manager. “I used to have this once a week, but then very recently after seeing the level of independence in the workplace...they decided to shift this to once every two weeks.” An important support system was the meetings, which provided an opportunity to discuss work progress, challenges, and career development.

"With my manager, it is more about my career path, but with my supervisor, it is about what I have been going through over the past two weeks."

Robin was proactive in seeking opportunities for professional development, "I've also recently managed to tell my supervisor that I'll be starting a new specialist diploma course happening in April...that specialist diploma is relevant to my current profession." Robin added that the course, "I will be taking evening classes, and the best part is that it will be held after my workday."

Robin feels content with the support they receive from their employers and colleagues and appreciates the opportunities for personal networking and professional growth. "I am quite content so far to say because it gets to a point when I am in touch with not only my colleagues but also my supervisor's boss and his and her and his boss after that." Initially, Robin had a more frequent level of support, but over time, the level of support became more incidental and less frequent.

Communication with Coworkers and Supervisors

Robin emphasizes the importance of effective communication with coworkers and supervisors. Robin states that, "It's more like they have actually developed; we have already developed this level of trust." which has been crucial for their growth in the workplace. Having learnt to communicate their needs and preferences at work, has helped Robin manage challenges more effectively at work. "After I went through all the support trials and tribulations...the challenges that became opportunities for my growth in the workplace now." Robin shared an example of a challenge that became an opportunity, "It started back in around 2, almost 2 years ago when this work was taken up by a contractor...it would be a great idea for me to undergo training with this Predecessor", as they took over responsibilities from a predecessor, which required training and skill development. The training received from the predecessor became a learning opportunity for Robin as they were able to take over the responsibilities. [Note: Robin did not want to describe more on the "support trials and tribulations", and the researchers did not probe further to understand the challenges faced.]

Robin has also learned to manage anxiety better over time, such as the ability to focus on assessing the environment and finding solutions to problems. "It was difficult for me to manage my anxiety then...now, I guess, to a point when I would not want to put my anxiety first.". Autistic individuals need to be able to manage anxiety to thrive in the workplace, reduce stress and improve overall job performance. With effective anxiety management, autistic employees are less likely to take time off due to stress-related issues, leading to higher job retention rates (Organization for Autism Research, 2023).

Job Satisfaction and Career Goals

Robin enjoys the dynamic nature of the job, spending half of their workday in the lab and the other half attending meetings or working at their desk. The opportunity to contribute ideas during meetings and track discussions through notetaking is well appreciated as, "I so far enjoy the network that I do (have)".

Rollnik-Sadowska and Grabińska (2024) review the literature on managing neurodiversity in workplaces and highlight the importance of inclusive strategies and the unique contributions of neurodivergent individuals when appropriately managed. Research also states autistic individuals may bring unique attributes, such as high attention to detail, ability to do cognitively challenging but repetitive work, having extremely unusual areas of interest, into jobs that are appreciated by organizations and might give them a competitive advantage (Rollnik-Sadowska & Grabińska, 2024), as seen in Robin's case.

Robin is focused on completing a Specialist Diploma in Cosmetic Science to enhance domain knowledge and skills relevant to their current role. "The first goal that I'm currently ongoing is to continue bringing my best self to the workplace, just being authentic. And not only that, be able to speak out if needed." Robin's aim is to maintain authenticity and open communication in their professional environment.

For the long-term aspirations, Robin aspires to remain in the field of science, continuously improving and contributing to their organization. They are open to exploring new opportunities within the industry while staying committed to their passion for science. "I can actually see myself working in XYZ

company for the next year...I don't see myself working in another industry, or unless things change then. I can't say for sure. Maybe I could be working on something related to the field of science." These goals reflect Robin's dedication to personal and professional growth, as well as their commitment to making meaningful contributions to their field.

DISCUSSIONS, RECOMMENDATIONS AND CONCLUSIONS

This case study highlights the journey and responsibilities of Robin, an associate researcher, emphasizing the blend of challenges and satisfaction in their role. Robin's proactive approach to personal development and organizational contributions underscores their commitment to their career and the research community. The support systems and accommodations such as the training and regular meetings with supervisors provided by their workplace play a crucial role in their professional growth and job satisfaction. Robin had an inclusive workplace culture which supported and valued the individual and their work processes (Rezai et al., 2023).

This case study provides a comprehensive overview of the career journey, responsibilities, and experiences of an associate researcher at XYZ company. Robin has demonstrated significant growth and adaptability since joining the company in August 2021. Their proactive approach to professional development, including pursuing a Specialist Diploma in Cosmetic Science, highlights their commitment to continuous learning and improvement.

Robin has effectively managed challenges, such as handling lab accidents and taking over responsibilities from a predecessor, by leveraging training and support systems. Communication and collaboration with coworkers and supervisors have been crucial for Robin's success. Regular 1-to-1 connect meetings and the development of trust within the team have facilitated a supportive work environment. Robin has also learned to manage anxiety and emotions better over time, "thanks to the initial support from job coaches" and ongoing professional development.

Overall, Robin's journey at XYZ company exemplifies the importance of support systems, effective communication, and continuous professional development in achieving career success and personal growth. Their experiences and proactive mindset serve as inspiration for others in similar roles. This case study provides a nuanced understanding of the daily realities, challenges, and strengths of individuals with special needs, enhancing awareness and comprehension. It ensures that these individuals are heard, valued, and represented in both research and societal conversations. By capturing the lived experiences of participants, the study encourages them to reflect on and share their own stories, fostering empowerment and self-determination.

The insights gained from this research will contribute to the development of inclusive solutions, benefiting educational advancements and promoting inclusion and diversity. More such case studies will shed light on the lived experiences of people with special needs in their workplace.

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