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Global Robotic Wheelchairs Market: Analysis By Impairment (Temporary Impairment, Geriatric Support, and Permanent Impairment), By Application (Residential, and Healthcare Institutions), By Region Size and Trends with Impact of COVID-19 and Forecast up to 2030

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Abstracts

A robotic wheelchair is defined as a powered wheelchair with an automatically controlled reprogrammable capability to sense, plan and negotiate indoor and/or outdoor environments with the goal of achieving a specific task or set of tasks. The global robotic wheelchairs market is associated with design, development, production, and distribution of robotic-powered wheelchairs to various end-user segments including healthcare facilities, residential users, elderly care facilities, etc. The global robotic wheelchairs market value stood at US$163.27 million in 2024, and is expected to reach US$312.55 million by 2030.

Robotic wheelchairs incorporate advanced technologies such as artificial intelligence (AI), machine learning (ML), sensors, and navigation systems to provide enhanced mobility and autonomy to users. They are primarily designed for individuals with physical disabilities, mobility impairments, or chronic conditions that limit their ability to use traditional wheelchairs. The global robotic wheelchairs market has seen steady growth in recent years, driven by several key factors, including, rapidly ageing population, rise in annual joint replacement surgeries, growing emphasis on improving the quality of life for individuals with disabilities, surging consumer disposable income, increasing cases of accidents, rise in healthcare spending, rising obesity prevalence, and a growing need for affordable and accessible mobility aids. Furthermore, in recent times, trends such as personalized wheelchair designs, growing R&D activities to focus

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on sensor technologies, rise in use of cloud-based data analytics for patient monitoring, increasing development of exoskeleton-based robotic wheelchairs, and ongoing integration of smart technologies, such as IoT and AI, will continue to boost the growth of the global robotic wheelchairs market in the forecasted period. The market is expected to grow at a CAGR of 11.43% over the projected period of 2025-2030.

Market Segmentation Analysis:

By Impairment: The report provides the bifurcation of the global robotic wheelchairs market into three segments on the basis of impairment, namely, permanent impairment, geriatric support, and temporary impairment. Permanent impairment is the largest segment of global robotic wheelchairs market owing to increased need for long-term mobility solutions, global rise in chronic diseases & congenital disabilities, high dependence of people with permanent impairments on mobility devices for daily activities, growing need for autonomy among consumers, rising awareness of the availability and benefits of robotic wheelchairs, positive government support and reimbursement policies for advanced mobility aids, rising awareness campaigns and advocacy for disability rights, and increase in disabilities resulting from accidents, injuries, and degenerative conditions. Geriatric support is the fastest growing segment of global robotic wheelchairs market owing to rising life expectancy, rapidly aging global population, particularly in regions like Europe, North America, and Asia, rising prevalence of chronic conditions among the elderly, increasing focus on encouraging physical activity, rising adoption of aging in place trend, increasing consumer confidence in the reliability and effectiveness of robotic solutions, growing healthcare support, and increasing emphasis on user’s sense of autonomy and emotional well-being.

By Application: The report provides the bifurcation of the global robotic wheelchairs market into two segments on the basis of application, namely, residential, and healthcare institutions. Residential is the largest and fastest growing segment of global robotic wheelchairs market as a result of increasing consumer preference for home healthcare, rising geriatric population, growing number of individuals with physical disabilities, increasing affordability and availability of robotic wheelchairs, growing awareness and adoption of assistive technologies, increasing patient’s desire for independent living, positive shift in societal attitudes towards mobility aids with an increased focus on inclusivity and the removal of stigmas associated with using wheelchairs, and ongoing advancements in battery technology for longer-lasting battery life & faster charging times for robotic wheelchairs.

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By Region: The report provides insight into the global robotic wheelchairs market based on regions namely, North America, Europe, Asia Pacific, and rest of the world. North America is the largest region of global robotic wheelchairs market as a result of strong purchasing power among consumers, presence of robust healthcare infrastructure, high life expectancy, widespread adoption of innovative assistive technologies, increase in healthcare spending, growing recognition among healthcare providers and policymakers about the benefits of robotic wheelchairs, existence of a sizable population suffering from chronic diseases, well-established reimbursement policies and favorable healthcare regulations in countries like the US & Canada, and strong presence of major market players, including, Karman Healthcare, Inc., WHILL, Inc., Pride Mobility Products Corp., etc. in the region.

Asia Pacific is the fastest growing region of the global robotic wheelchairs market due to a increasing prevalence of disabilities, large patient pool, a growing geriatric population base, improving middle-class affordability of these devices, a rapidly evolving healthcare industry, rising awareness of assistive technologies, an expanding medical tourism industry, the implementation of a government-funded insurance scheme and reimbursement scenario, and improved healthcare access in the region. On the basis of region, Asia pacific robotic wheelchairs market is divided into five regions namely, China, Japan, India, South Korea and rest of Asia Pacific, where China is the largest region of Asia Pacific robotic wheelchairs market owing to strong manufacturing hub for robotics and electronic manufacturing, rapidly growing patient population, country's robust economic growth, rapid expansion of healthcare infrastructure, growing number of domestic manufacturers & innovators in the medical device sector, growing awareness & acceptance of assistive technologies, and increasing adoption of smart technologies in Chinese households.

Market Dynamics:

Growth Drivers: The global robotic wheelchairs market has been rapidly growing over the past few years, due to factors such as aging population, rising incidence of obesity, increasing popularity of advanced electric wheelchairs, growing need for autonomy among consumers, rising prevalence of mobility impairments, etc. Obesity is associated with reduced mobility due to joint pain, fatigue, respiratory issues, or other health complications such as arthritis or cardiovascular issues. Robotic wheelchairs, equipped with advanced navigation and assistance features, provide a reliable mobility solution for individuals with obesity, allowing them to regain independence by enabling them to move within homes, workplaces, and public spaces comfortably and effortlessly. Robotic wheelchairs are designed with features that accommodate the specific needs of

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individuals with obesity, such as wider seats, higher weight capacities, and enhanced stability. Furthermore, increased consumer focus on mental health and psychological well-being has boosted the overall market growth. Many individuals with mobility impairments experience frustration, anxiety, or a sense of dependence that deteriorates their mental health. Robotic wheelchairs helps individuals regain control over their daily activities and social interactions, enhancing confidence, self esteem, and improved sense of dignity.

Challenges: However, the global robotic wheelchairs market growth would be negatively impacted by various challenges such as, high price of robotic wheelchairs, increased complexity in using smart robotic wheelchair technology, etc. The high price of robotic wheelchairs is expected to impend the growth of global robotic wheelchairs market over the forecasted period. Robotic wheelchairs are advanced devices equipped with sensors, AI systems, navigation technologies, and other high-end features. These components make the base price of the wheelchair significantly higher than standard or manual wheelchairs, and for many individuals or healthcare institutions, this upfront cost of purchasing a robotic wheelchair may be unaffordable, limiting its accessibility to only wealthier consumers or well-funded facilities. In addition, robotic wheelchairs often require additional accessories to optimize their functionality, such as specialized batteries, enhanced control systems (like voice or joystick controls), or custom seating arrangement, further adding to the overall expenses, and discouraging potential buyers who are already hesitant about the high base price.

Trends: The global robotic wheelchairs market is projected to grow at a fast pace during the forecasted period, owing to, increasing integration of AI, ML, and sensor technologies, ongoing use of IoT and smart technologies, growing awareness and acceptance of assistive technologies, rising emphasis on patient’s quality of life, etc. Increasing integration of artificial intelligence (AI) and machine learning (ML) algorithms have enabled robotic wheelchairs to better analyze and navigate through crowded spaces, detect obstacles, and make real-time adjustments to its path by processing inputs from sensors and cameras. Robotic wheelchairs increasingly feature autonomous navigation systems, utilizing AI and sensors to detect obstacles, plan routes, and adjust speed. These systems eliminate the need for manual control, providing users with greater freedom and mobility. In addition, global healthcare industry is progressively focusing on patient-centric care, where the primary focus is not just on treating medical conditions but on improving overall well-being and life quality. Increasing number of healthcare providers are adopting advanced mobility aids like robotic wheelchairs into their rehabilitation plans as these devices increasingly align with patient centric philosophy by offering mobility solutions that improve independence,

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reduce caregiver dependence, and enhance social inclusion.

Impact Analysis of COVID-19 and Way Forward:

COVID-19 brought in many changes in the world in terms of reduced productivity, loss of life, business closures, closing down of factories and organizations, and shift to an online mode of work. Lockdown policies imposed by the government to prevent the spread of the virus forced robotic wheelchair manufacturing companies to either shut down or run low on production capacity, resulting in lower production and demand of robotic wheelchairs during the period, 2019-2020. Sales for robotic wheelchairs were negatively impacted during the period as a result of high dependence of wheelchair sales on in-person demonstrations and consultations, which were severely restricted during the pandemic. Temporarily closure of physical retail outlets and distributors reduced opportunities for consumers to test & purchase robotic wheelchairs, decreasing overall demand and sale of robotic wheelchairs during pandemic.

Competitive Landscape:

The global robotic wheelchairs market is fragmented, with large number of companies, ranging from established brands to smaller regional players and niche manufacturers catering to the industry demand. The key players of the market are:

Sunrise Medical Limited
Permobil AB
Karman Healthcare, Inc.
WHILL, Inc.
Ottobock SE & Co. KGaA
MEYRA Group (MEYRA GmbH)
Airwheel Holding Limited
Tmsuk Co., Ltd.
Pride Mobility Products Corp.
DEKA Research & Development Corp (Mobius Mobility)
UPnRIDE Robotics Ltd.
entaur Robotics

The competitive landscape is characterized by strategic partnerships and collaborations between key players aimed at expanding their product portfolios and geographical reach. Increasing number of players are engaging in key strategies, including mergers and acquisitions to consolidate their position in the global market. For instance, On

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September 14, 2023, Permobil acquired Canada-based PDG Mobility, a global company in designing and manufacturing manual “tilt-in-space" wheelchairs intended to improve posture and function and provide skin protection for individuals. This acquisition will strengthen Permobil’s portfolio within the manual wheelchair segment. Therefore, prominent producers in the global robotic wheelchairs market will continue to focus on geographical expansion through the acquisition of smaller regional players in order to increase their revenue and expand their market presence in developing countries.

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